Allied-Axis

THE PHOTO JOURNAL OF THE SECOND WORLD WAR

Karl-Gerät 040 at the front









Panzerjäger I • SdKfz. 10 1-ton halftrack
U.S. M2 Treadway Bridge • PzKpfw. IV Ausf. A
Type 97 Japanese medium tank

Issue 9



The round is ready to be lowered to the tray. The tray was sufficiently large that it was one of the components to be transported separately. (BA)



Rollers on the tray allowed the heavy shell to be slid into place in the breach, but it still took the effort of at least six of the crew. (BA)





A final check of the round is done and it is also carefully wiped to remove any debris that could foul the rifling of the barrel. The larger round was a "Betongranate," or concrete piercing shell and was filled with 280 kg of explosives. (BA)

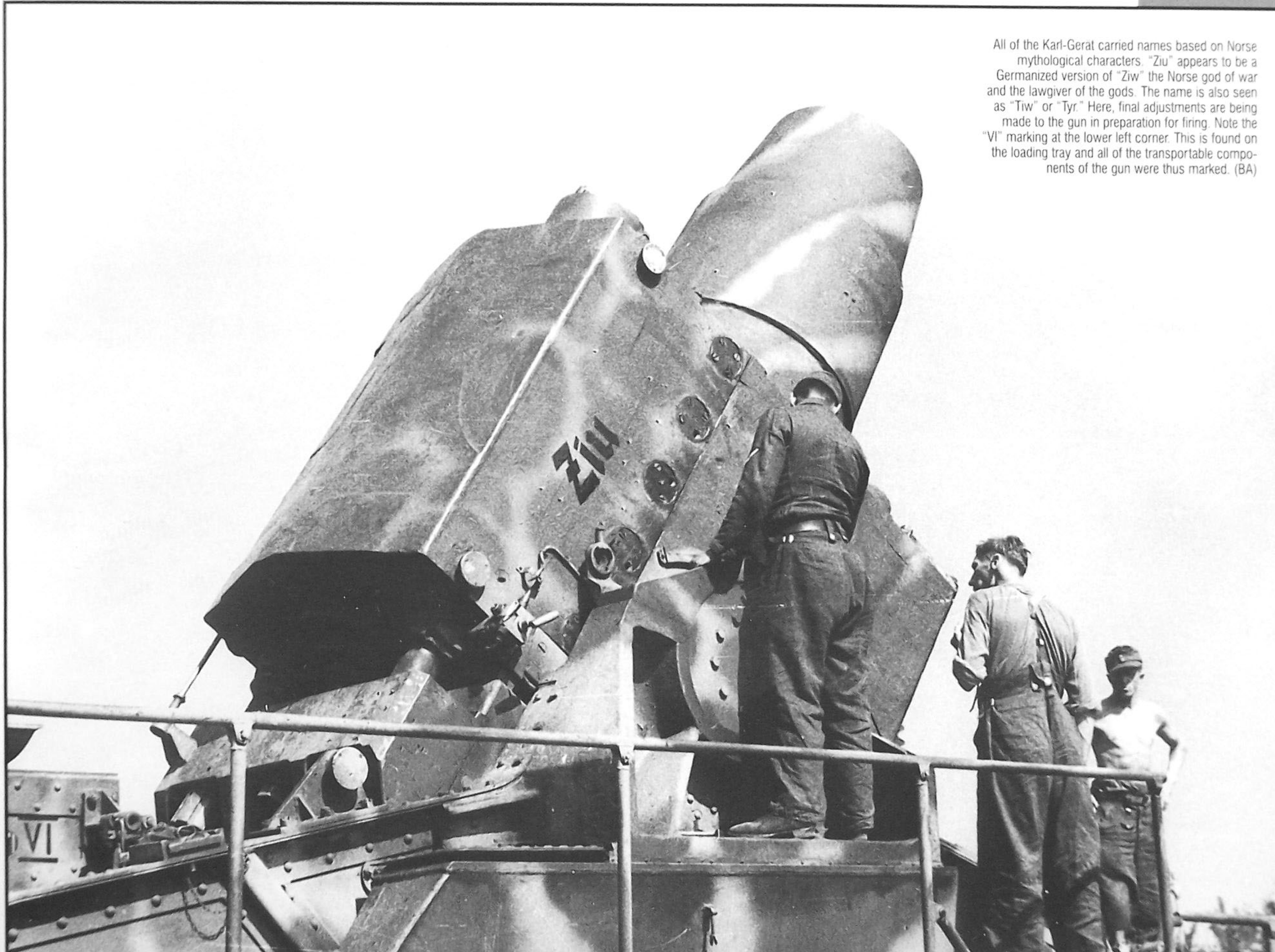


Here, details of the rammer, tray and shell can be seen as the round is finally seated into the breech. (BA)

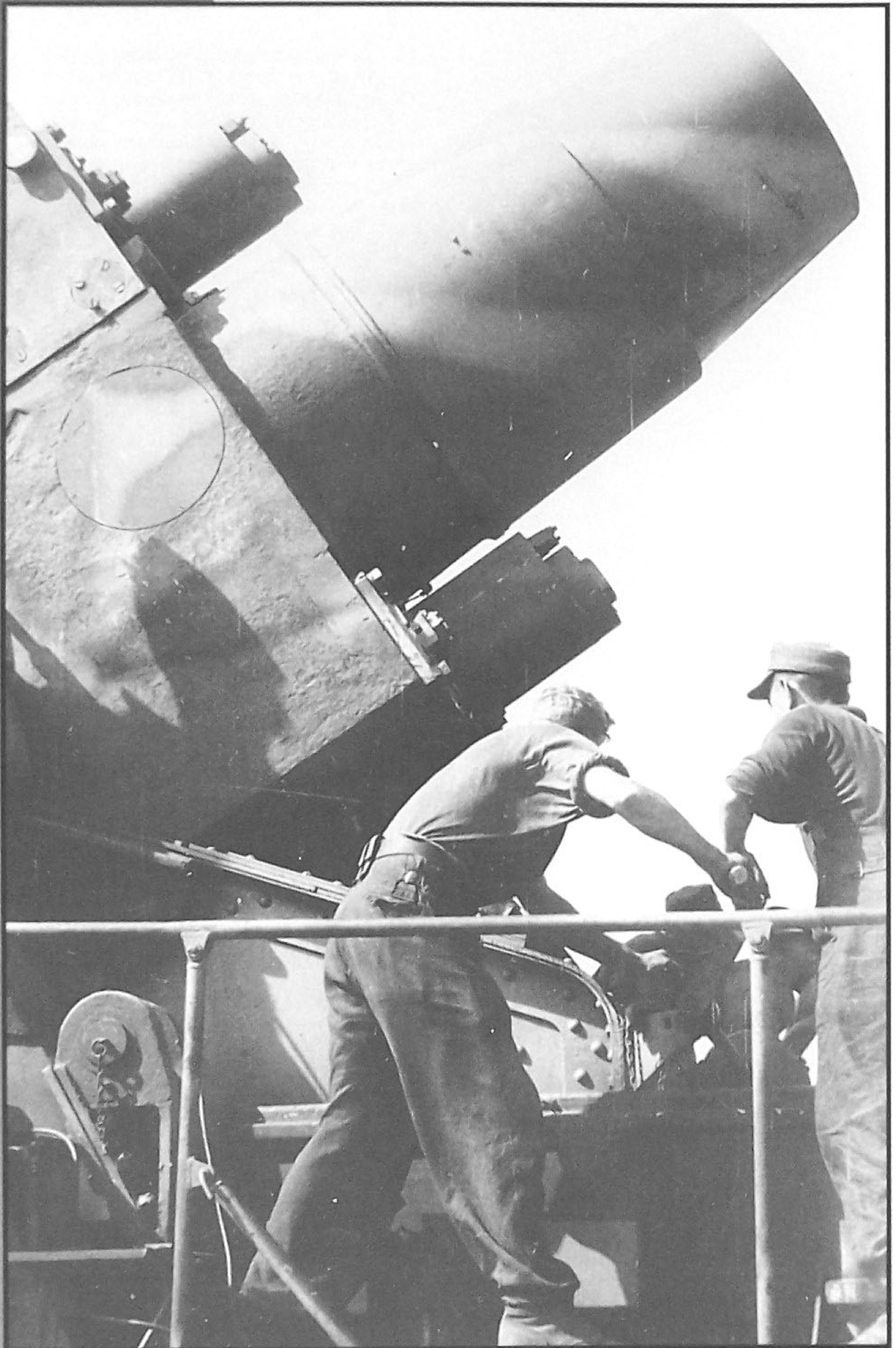




Interestingly, the Karl-Gerät had a separately actuated opening in the side of the breech to receive the charge for the shell. In the left shot, the charge is being added, while in the right shot the crew is checking the seat of the charge against the breech and the shell. Nine different charges were available for either shell type and for example, with charge four in place the concrete piercing shell could achieve a muzzle velocity of 220 meters per second. (BA)



All of the Karl-Gerät carried names based on Norse mythological characters. "Ziu" appears to be a Germanized version of "Ziw" the Norse god of war and the lawgiver of the gods. The name is also seen as "Tiw" or "Tyr." Here, final adjustments are being made to the gun in preparation for firing. Note the "VI" marking at the lower left corner. This is found on the loading tray and all of the transportable components of the gun were thus marked. (BA)



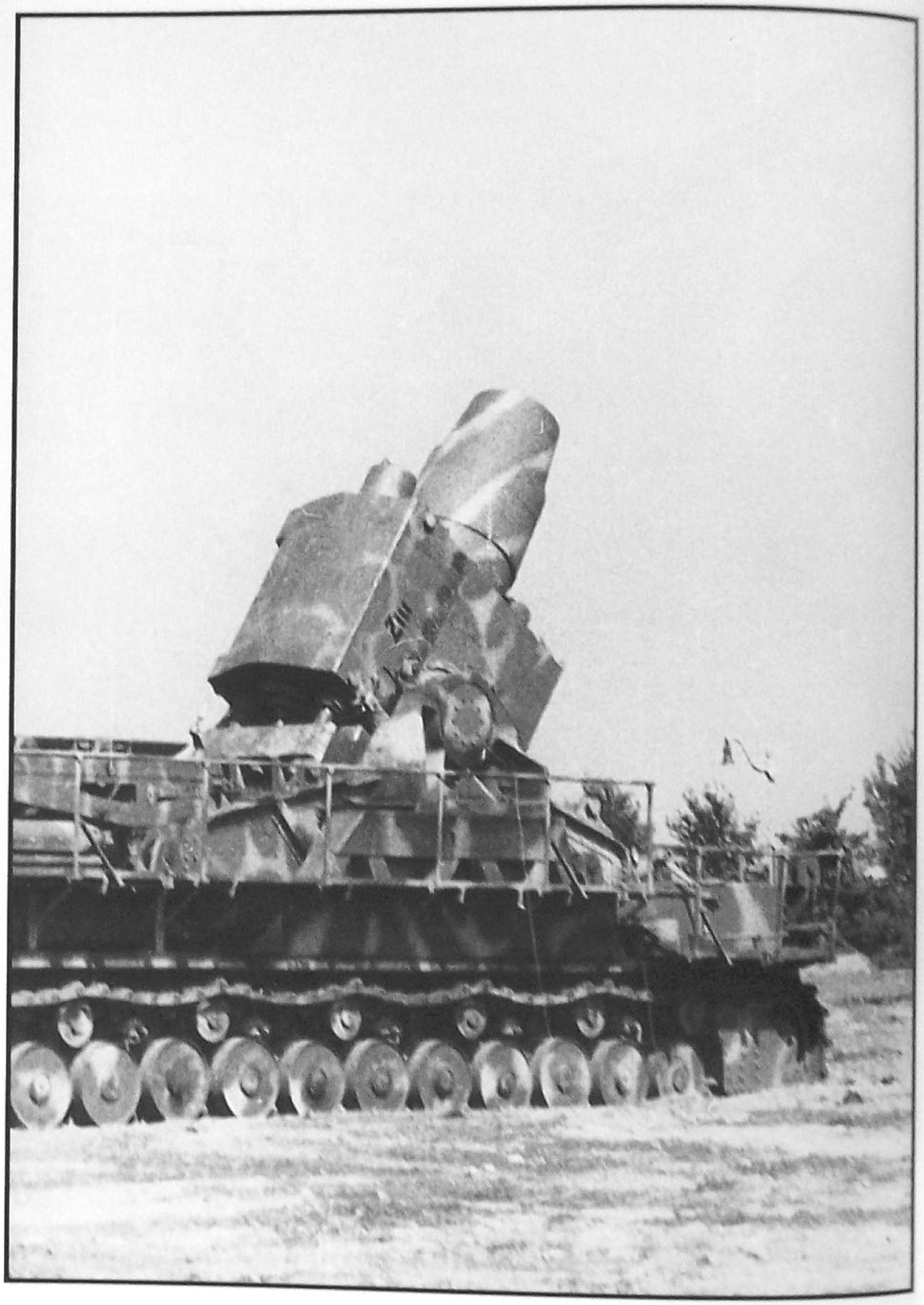


The gun tube length of the Karl-Gerät was just over five meters. The gun could elevate between 55 and 70 degrees, but could only be traversed four degrees. Larger adjustments meant moving the entire vehicle. However, using the main engine, the firing platform could be raised and lowered in only 30 seconds. A very careful and precise camouflage pattern has been applied to this gun. (BA)

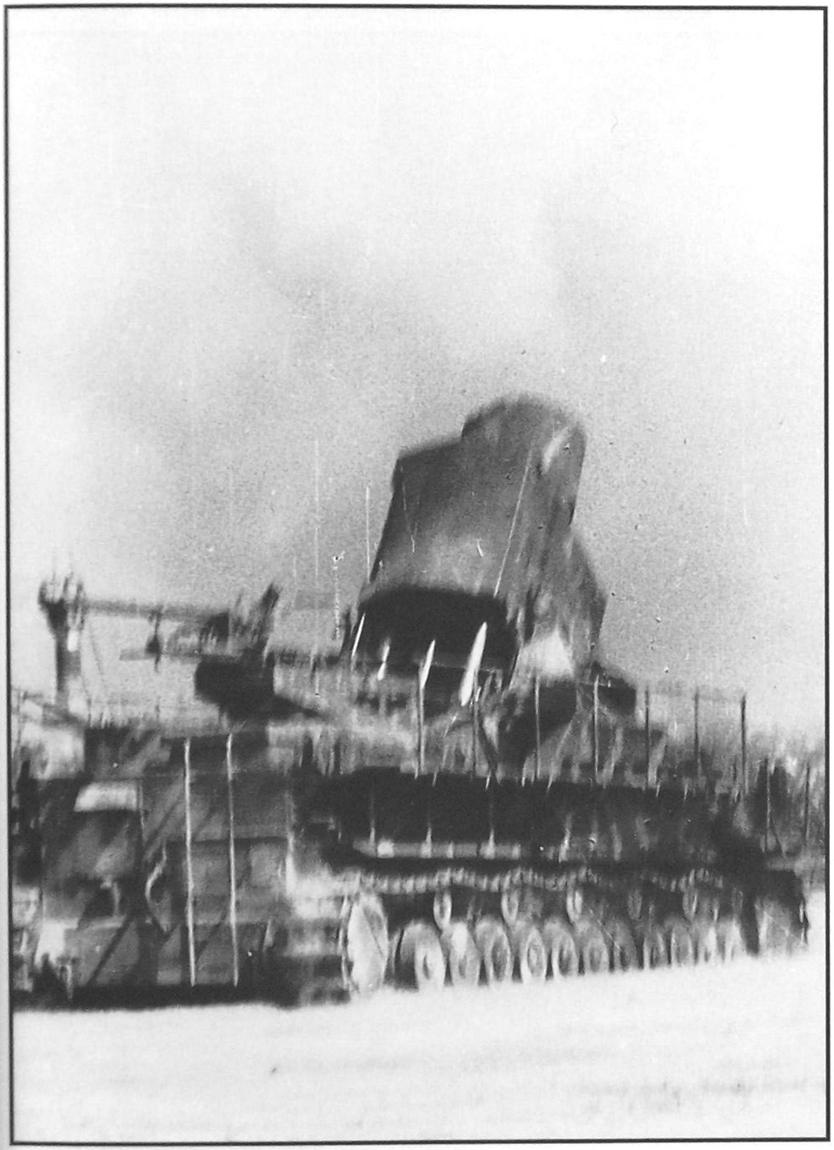


Once all preparations have been made, the crew abandons the weapon in preparation for remote firing. The size and sound of the round, as well as the recoil forces, necessitated that the crew is well away from the platform when firing. Note the electrical firing lead at the lower right of the photo. (BA)





Above left: At a suitability safe distance, one of the crew prepares to detonate the round. Detonation was by plunger, as seen in the gunner's right hand. (BA) **Above right:** The final moments prior to firing. Two different types of suspension were used on the Karl-Gerät. Guns I and II used an eight-wheeled rubber rimmed configuration, while guns III through VI used 11 steel wheels on each side. These two configurations also differed in the track type and pitch, the torsion bars and the drive sprockets. (BA)





Above left: Fire! The round is away. In addition to the recoil mechanism on the recuperator housing, the carriage of the gun was also mounted on a separate mechanism to recoil within the chassis. The larger Betongranate concrete piercing shell could penetrate up to 2.5 meters of concrete. A good crew could maintain a rate of fire of one round every ten minutes. Ziu was later one of the guns deployed in the west during the Battle of the Bulge, but it ended its career in Russian hands and is now on display at the Kubinka Russian Armor Museum. (BA) **Above right:** A factory shot of the Munitionsschlepper, this time based on the chassis of the Panzer IV Ausf. F. The Munitionsschlepper was designed and built by Rheinmetall-Borsig. (BA)

Contents

Photo Credits:

National Archives (NARA), Imperial War Museum, London (IWM), Bundesarchiv, Koblenz (BA) and Charles Parker. Other photos credited by or for the individual authors.

ALLIED-AXIS is published by Ampersand Publishing Company, Inc. 235 N.E. 6th Avenue, Delray Beach, Florida 33483. Tel: (561) 266-9686 Fax: (561) 266-9786. E-mail: mmir35701@aol.com.

Agent in Hong Kong and the Far East: Falcon Supplies Co., 201 Chit Lee Commercial Building, 30 Shaukiwan Road, Hong Kong Tel: 852 2886 2290 Fax: 852 2886 3001. E-mail: falcon@hk-hobby.com.hk

Agent in the UK and Europe: Historex Agents, Wellington House, 157 Snargate Street, Dover, KENT CT17 9BZ Tel: 01304 206720 Fax: 01304 204528. E-mail: sales@historex-agents.demon.co.uk

Agent in Italy and Europe: tuttostoria, via G.S. Sonnino, 34-43100 Parma, Italy Tel: 39-0521-292733 Fax: 39-0521-290387.

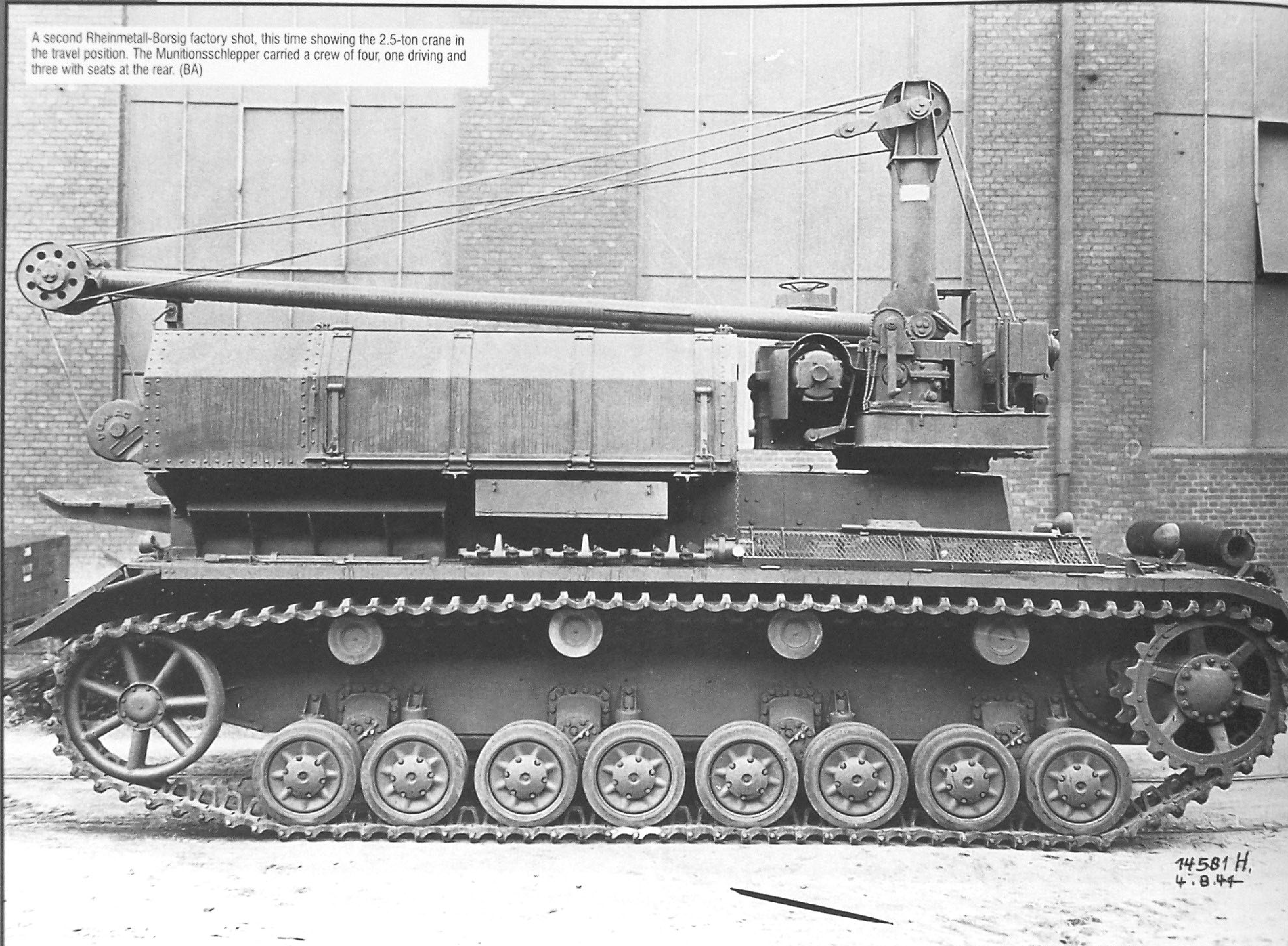
Ampersand Publishing



Heavy Mortar Gerät 040



The Karl-Gerät was a heavy siege weapon designed to reduce large fortifications such as the French Maginot Line. The weapon was known as Karl-Gerät after General Karl Becker, head of the evaluation committee. It was also known as Gerät 040. It was unique among heavy mortars of its time not only in its size, but also in its method of locomotion. The entire mortar was encased in a large steel rectangle that was fully tracked and motorized. Other large mortars then in use, such as the Czech 30.5cm, required transportation in several large loads and many hours of preparation to fire. The Gerät 040 could move into position under its own power at around four miles per hour. Once in position, the entire firing platform was lowered to the ground, also using an onboard engine. The gun was mounted opposite the direction of travel, so the gun could be relocated quickly in the case of counter battery fire. Only seven Gerät 040 were built and only six of those were fielded. Production ran from January through August 1941. The seventh gun was retained as a test vehicle and was not issued to the troops. The individual guns were known by their production numbers, expressed in Roman numerals, I-VII. Gerät 040 Number III is seen here during the opening phases of the Operation Barbarossa, in June 1941. The weapon was part of the 2nd Battery of the Schwere Artillerie-Abteilung 833, a unit specially formed for the Gerät 040. Although the Gerät 040 required a crew of 19, its appearance on the battlefield seems to have attracted quite a crowd. (BA)



A second Rheinmetall-Borsig factory shot, this time showing the 2.5-ton crane in the travel position. The Munitionsschlepper carried a crew of four, one driving and three with seats at the rear. (BA)

Panzerjäger I



In German military philosophy, the concept of the Panzerjäger predated the Second World War. The purpose of these units was to engage enemy tanks, thus freeing the main body of the Panzer force to support the infantry and facilitate breakthrough and exploitation. At the outbreak of the war, most of the existing units were equipped with the very inadequate 3.7cm anti-tank gun. The campaign in Poland only reinforced the shortcomings of this weapon. In addition to its poor penetration capabilities, the 3.7cm gun was a towed weapon and this configuration was a poor choice for the fast moving Panzerwaffe. Prior to the campaign in the west, it was decided to take advantage of the large supply of excellent anti-tank weapons obtained by the annexation of the Czech armament industry. The gun chosen was the Skoda 47mm kanon P.U.V. vz. 36., known in German service as the 4.7cm Pak 36(t). The gun was mounted on the proven chassis of the Panzer I Ausf. B within a three-sided armored superstructure. The official designation for the new weapon was 4.7cm PaK(t) (sf) Panzerkampfwagen I Ausf. B, but it is often referred to as Panzerjäger I. Over 200 vehicles were constructed by Daimler-Benz between March 1940 and February 1942. This vehicle is from the 521 Panzerjäger Abteilung and is seen here during a training maneuver. (BA)





Above left: Another training shot from the 521 Panzerjäger Abteilung. The distinctive "Jäger" insignia of the unit is seen clearly here. Both crewman still wear the early war "Panzer Beret." (BA) **Above right:** A vehicle of the same unit seen in France in June 1940. During the campaign in the west the 521 Panzerjäger Abteilung was assigned to Panzergruppe Von Kleist, which was part of the 12th Army in Heeresgruppe A. This crew is well outfitted with numerous stowage boxes and tarps, along with at least two spare roadwheels. Note the absence of the front fenders. (BA)



This Panzerjäger I is moving towards the front "somewhere in France." The presence of the muzzle brake cover indicates that the vehicle may be making an extended road march. Considerable extra stowage is carried and some effort has been taken to camouflage the vehicle with local foliage. (BA)

A vehicle of the 670 Panzerjager Abteilung. This picture may have been taken near the Belgian village of Pommeroeul in late May of 1940. (BA)





Another shot of the 670 Panzerjager Abteilung, this time crossing a temporary bridge in an undisclosed location. The photograph's sequence number may indicate that it was taken farther into Belgium that same week. Note the tarp fastened to the superstructure and the small brass horn. (BA)



These two shots represent genuine action and were taken while the 521 Panzerjäger Abteilung supported the 71st Infantry Division on the approach to Verdun in early June 1940. In addition to its efficient armor piercing shell, the 4.7cm gun could also fire a 2.3kg high explosive shell. Several of the infantrymen work closely with the vehicle to provided accurate firing information. Note the crew's use of the steel helmet, prudent in an open topped vehicle. (BA)





The British captured at least three Panzerjäger I at El Alamein and returned them to England for evaluation, where this photo was taken. They all had been assigned to the 605 Panzerjäger Abteilung. One of these vehicles was later sent to Aberdeen Proving Ground in the USA, where it remained on outdoor display for many years. (IWM)



Another Panzerjager I in service with the 605 Panzerjager Abteilung. During its deployment to North Africa, the 605 was attached to the 5th Leichte Division. This vehicle is equipped with a full overhead tarp, essential for desert operations. The crew has also constructed a large rack for the stowage of water filled cans (note their white stripe). (BA)



Another view of the same gun. At this time, Karl-Gerat Number III was firing on the Brest Zitadelle. This photo was most likely taken on the morning of June 24, when Number III first went into action. Its companion in the battery was Karl-Gerat Number IV. (BA)



Another view of the vehicle seen on the previous page. The abrasive quality of the desert sand has begun to expose the original gray base paint. The front fenders, so often seen discarded on European Panzerjägers, are firmly in place here. They would play an important role in controlling the ever-present desert dust. Dust covers on the muzzle brake and hull lights are also in place. (BA)



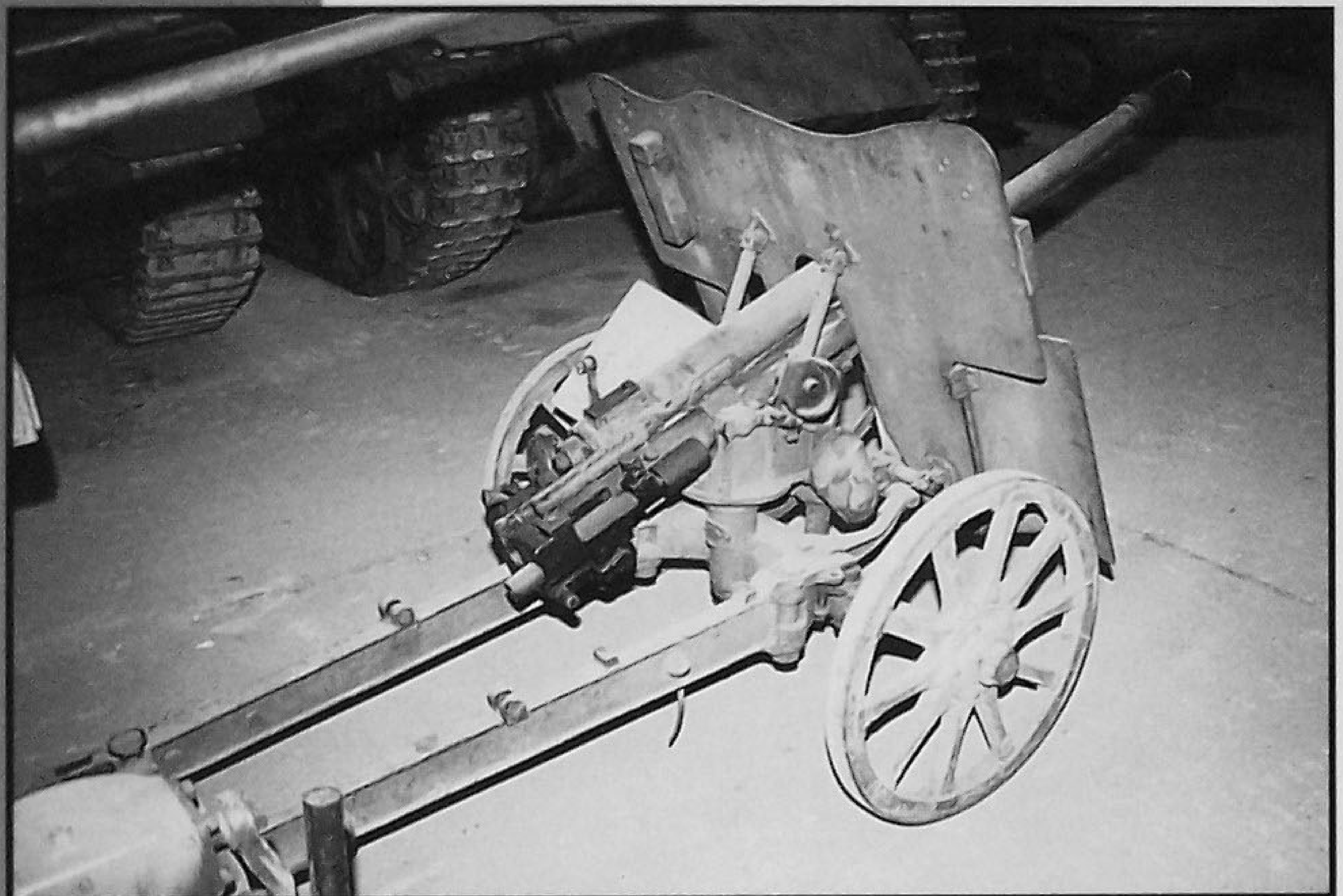
The high silhouette of the Panzerjäger I could be an advantage when seeking out targets in the flat desert terrain. This 605 vehicle is operating in slightly warmer weather while conferring with members of the Headquarters Company. (BA)

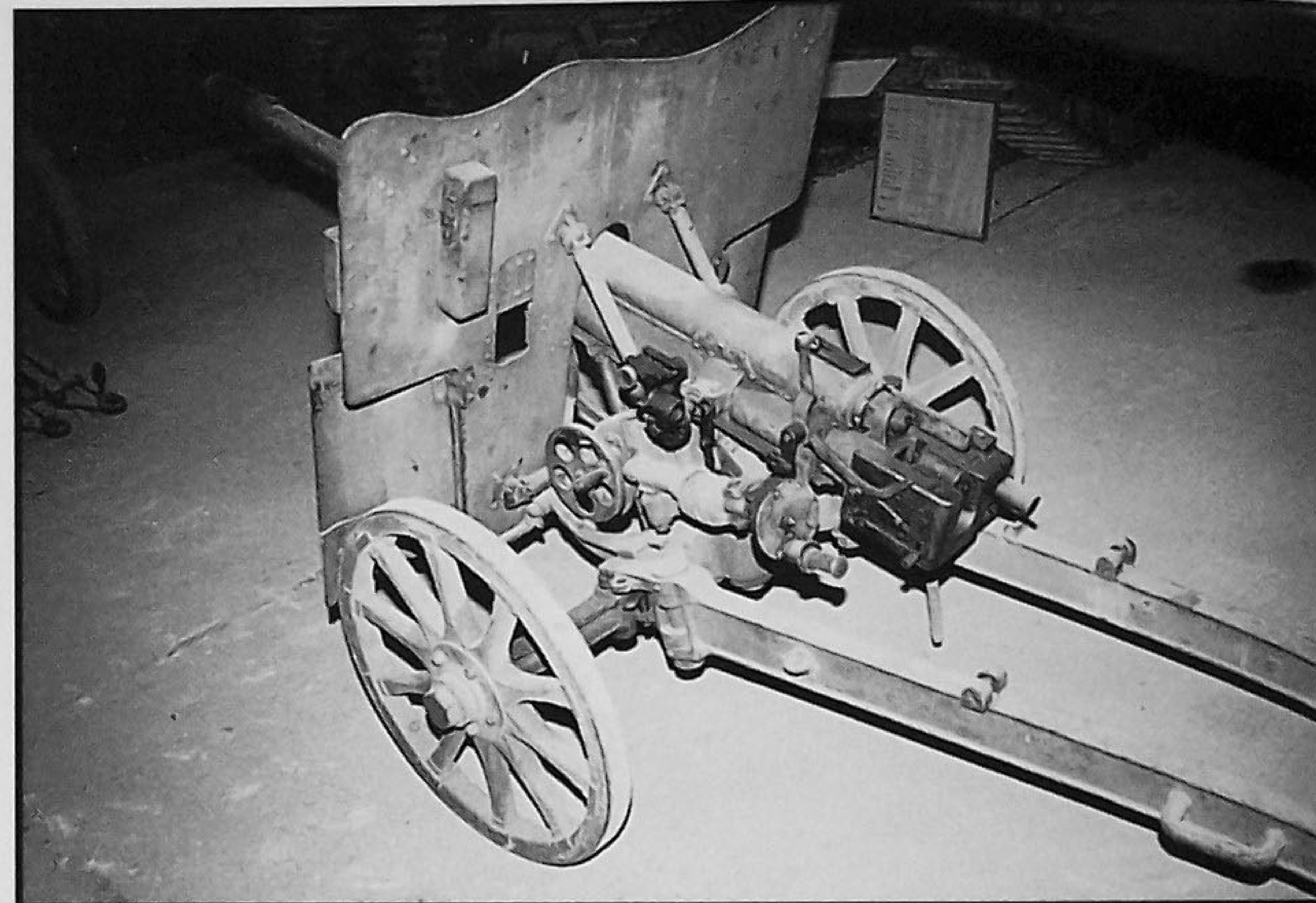


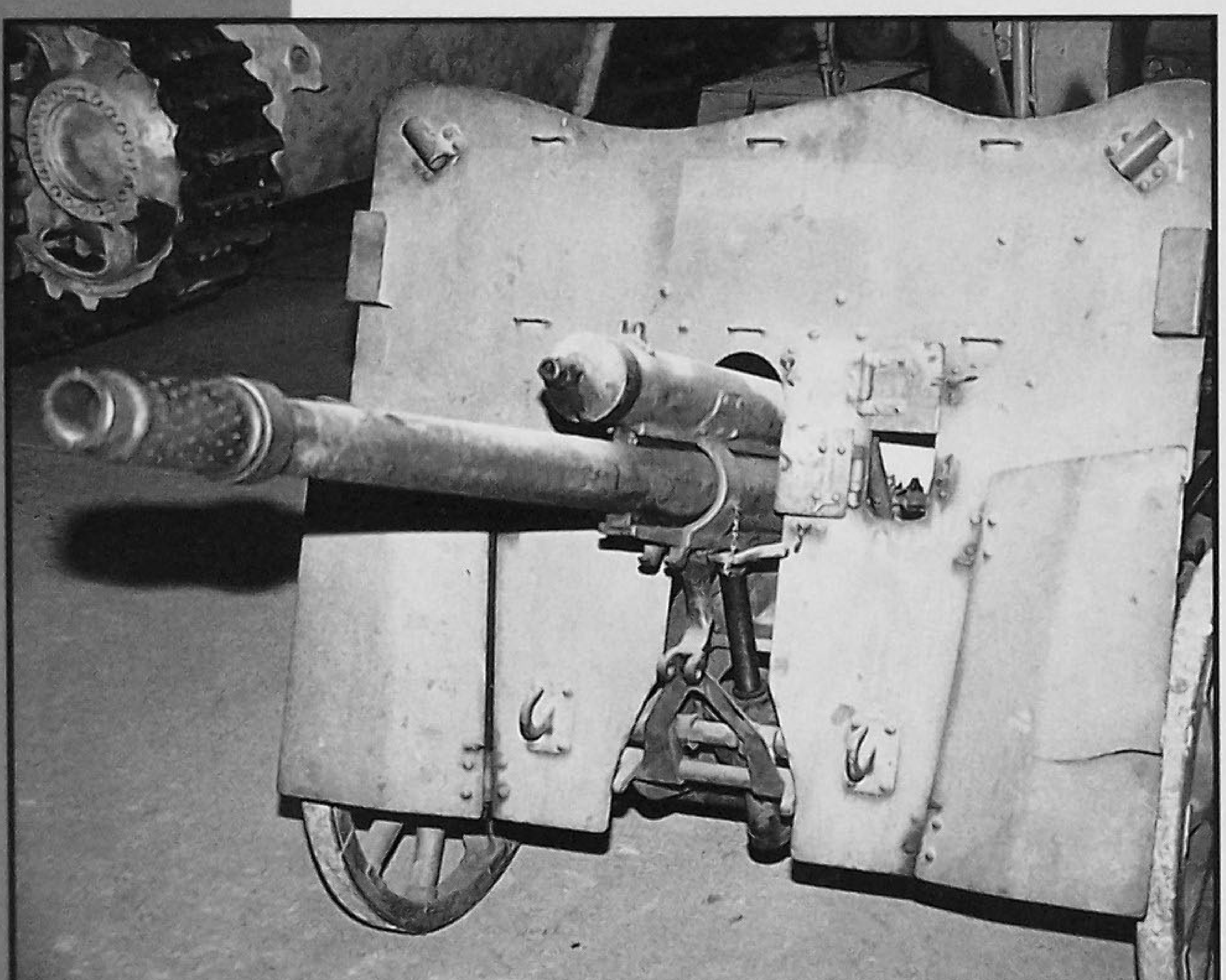
A Panzerjäger I completes the fording of a river in Russia. This gun is most likely assigned to the 543 Panzerjäger Abteilung of the XXIV Motorized Corps in the late summer of 1941. Note how the rear bogie articulates over the log. Logs and other solid debris were often placed on either side of a river ford to add traction to the slick surface created by the passing of multiple armored vehicles. (BA)

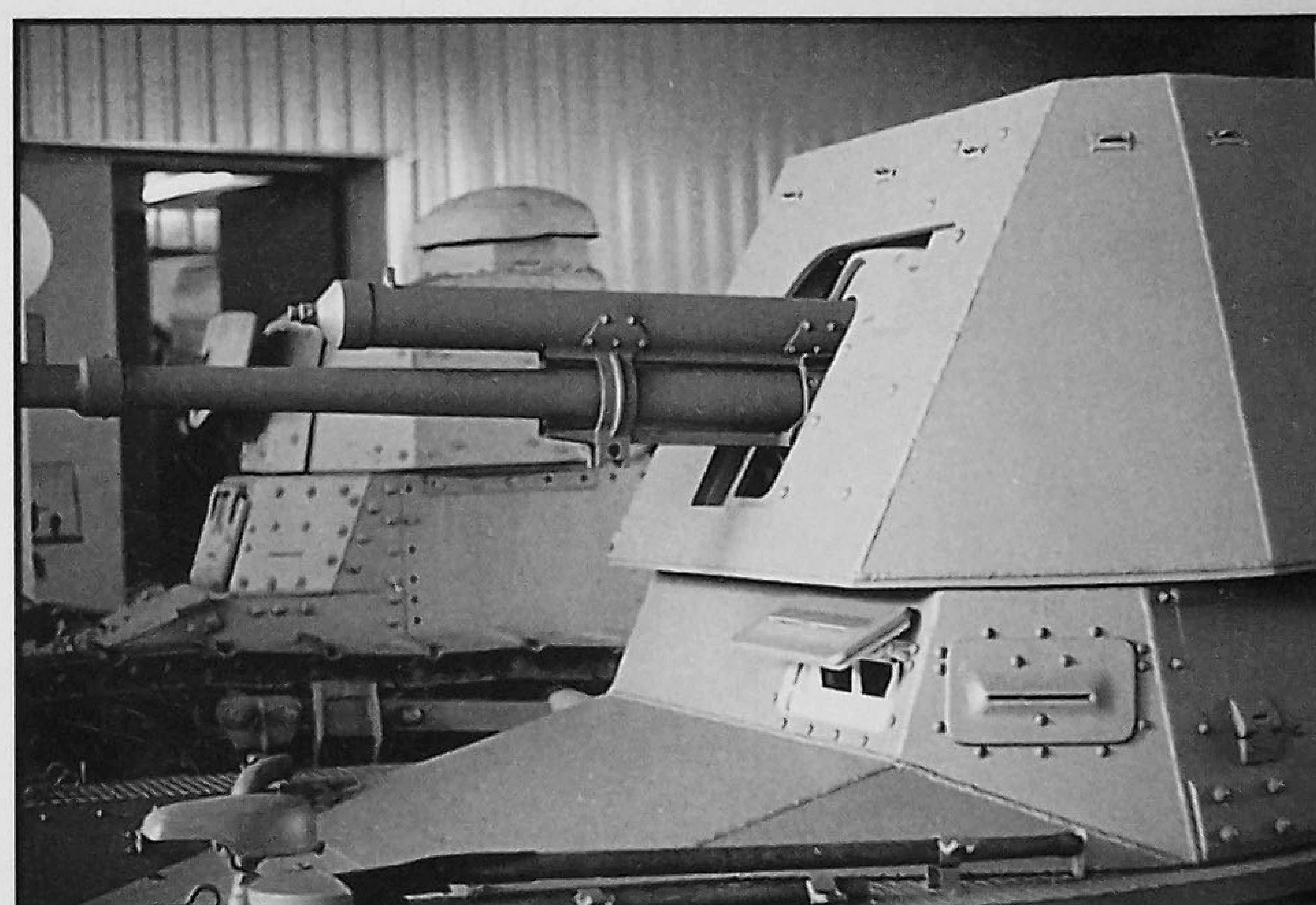


According to the publication *Nut & Bolts, Vol. 7*, "Graf Spee" is a mount of the Panzerjäger Abteilung of the Lehrbrigade (mot) 900 and is seen in Russia in the summer of 1941. It rests on a Sd.Anh. 115 trailer towed by a SdKfz. 8 12-ton half-track. (BA)

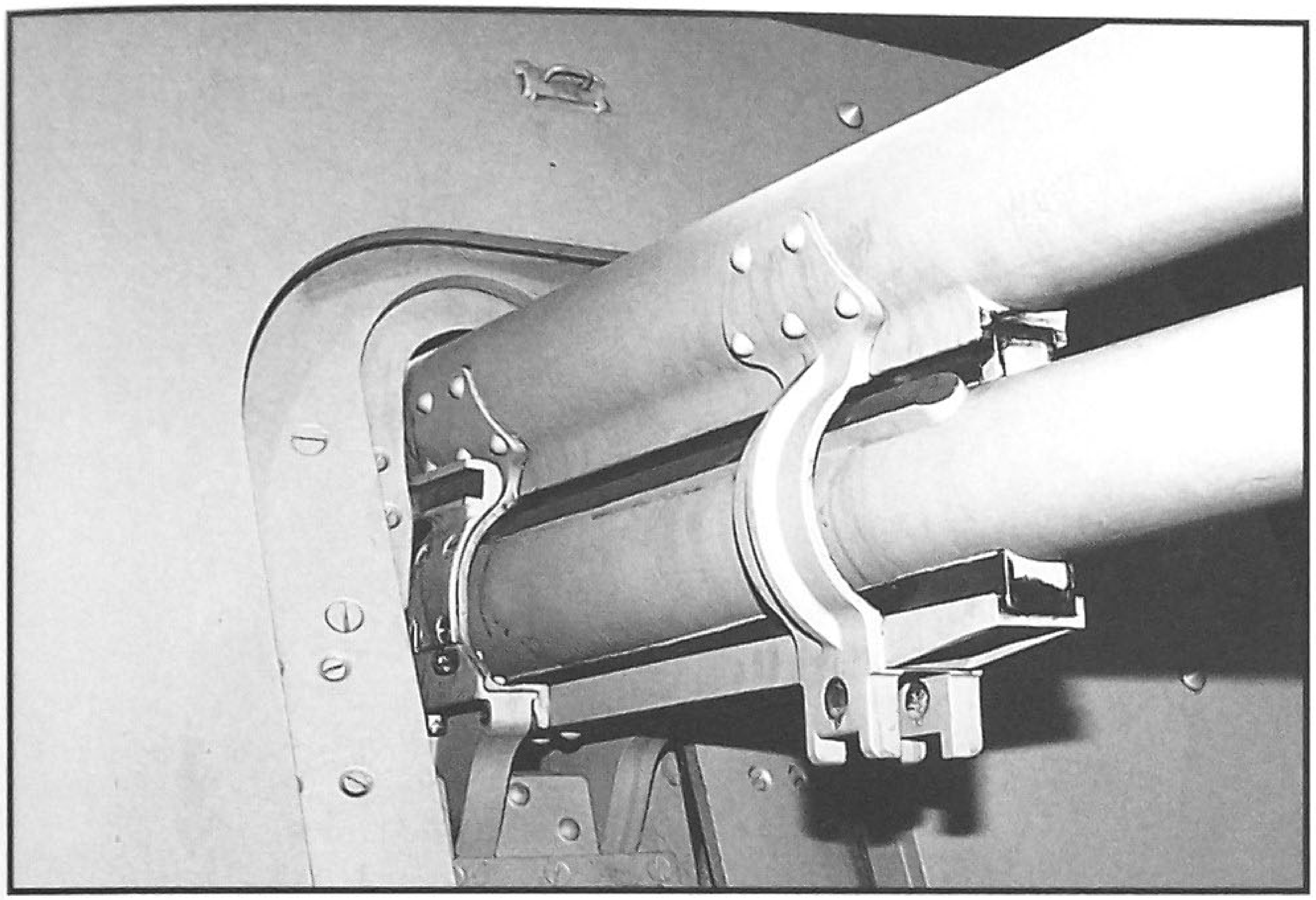


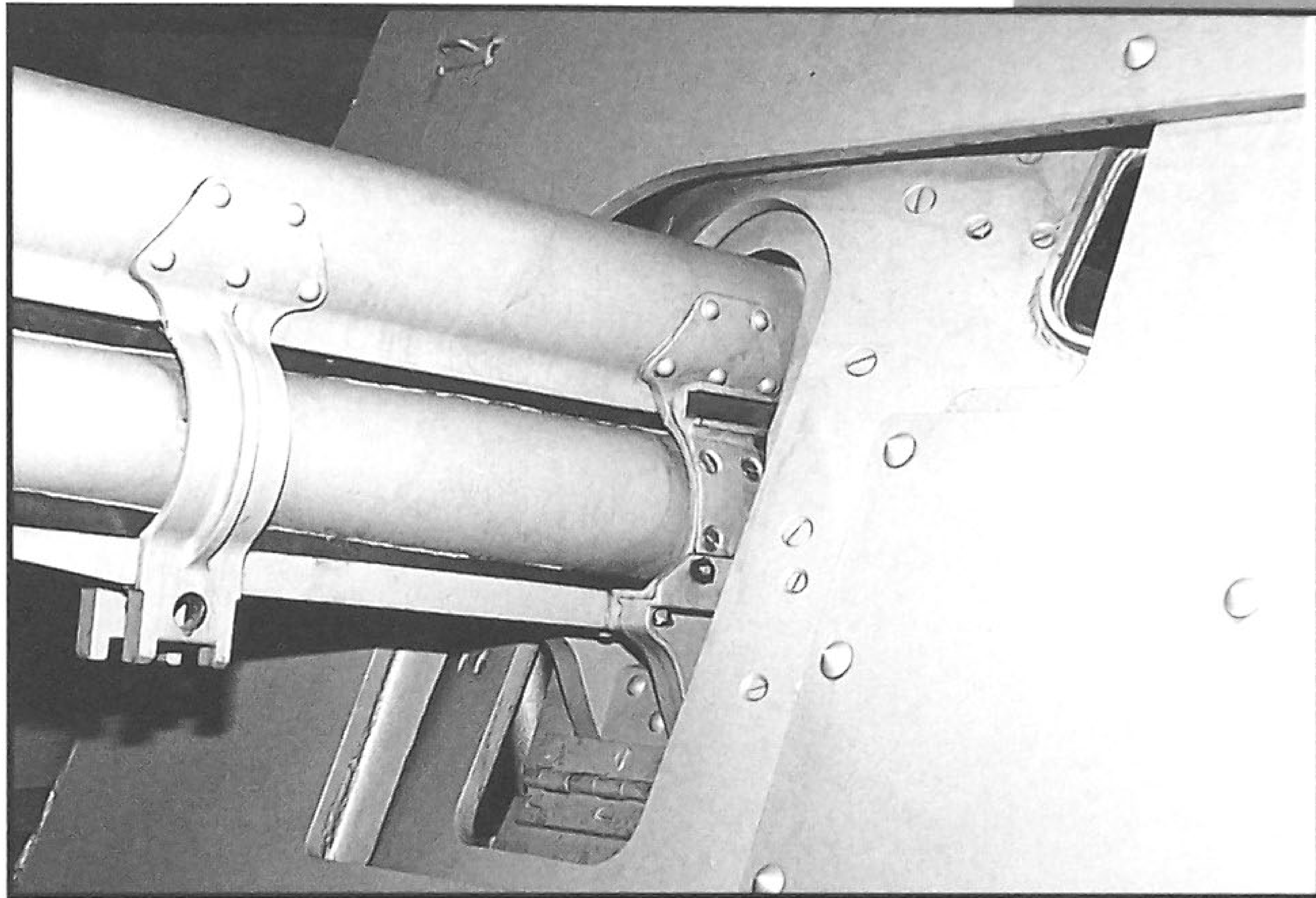


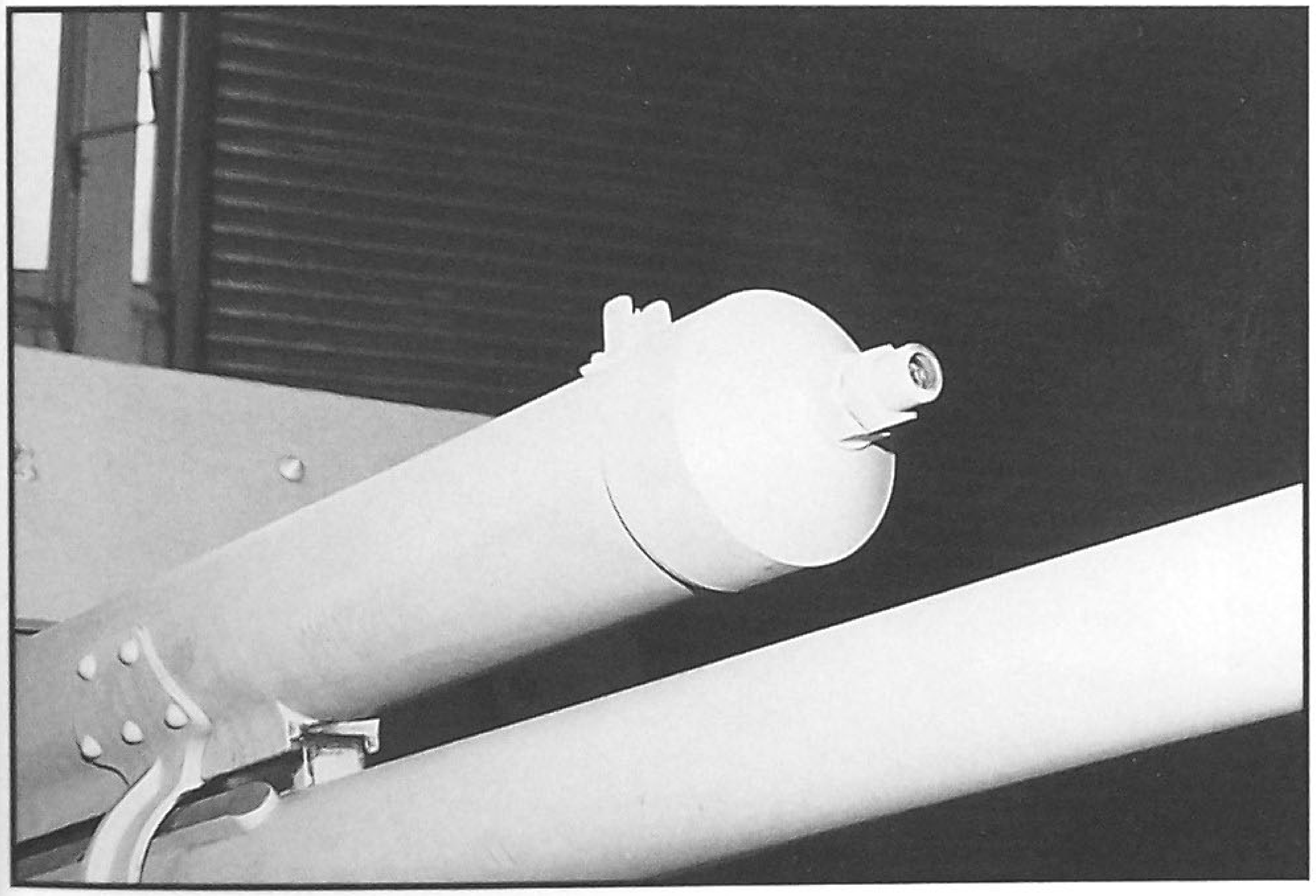


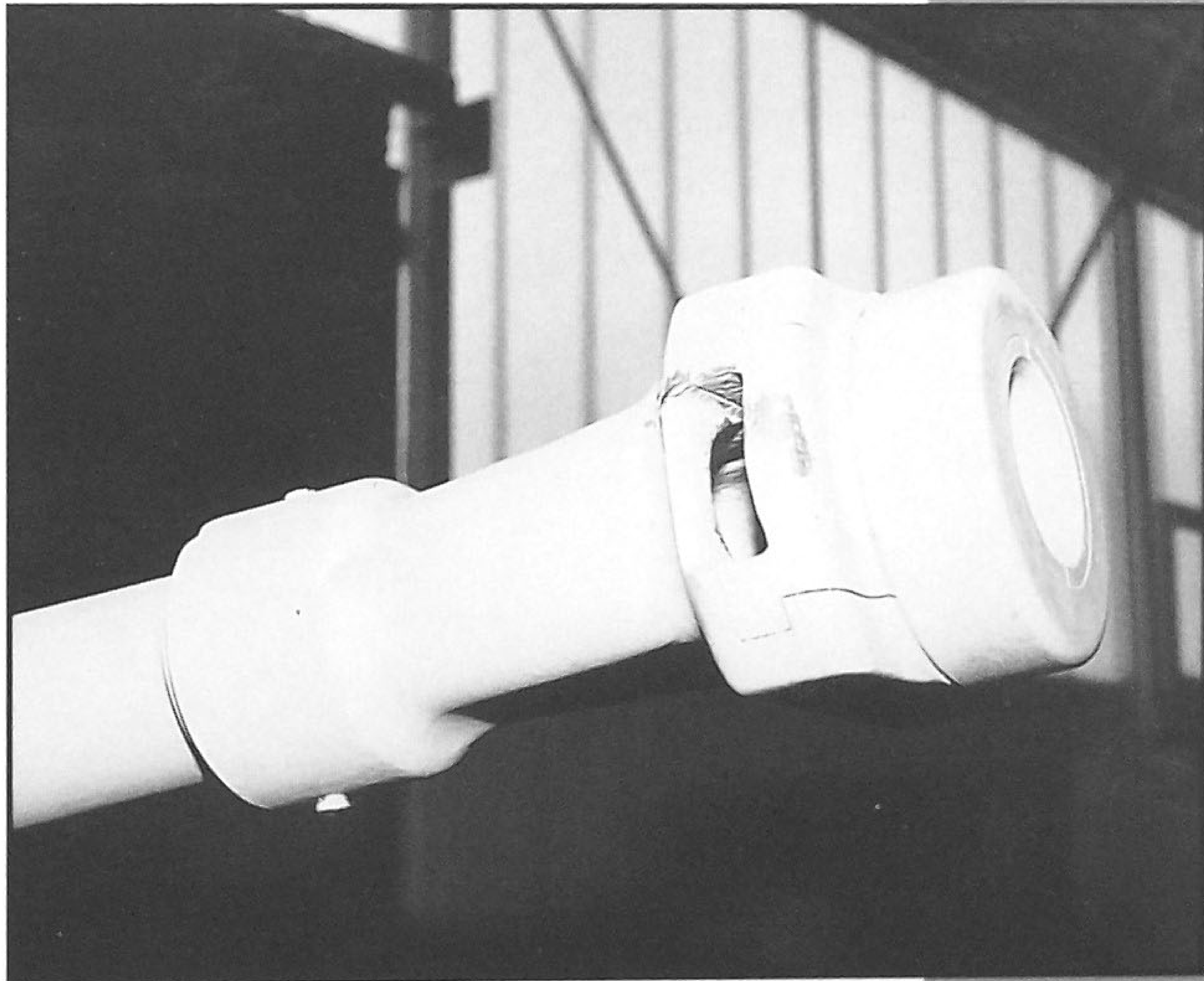


Top left, top right and left: Three views of the 4.7cm's predecessor, the 3.7cm KPUV vz. 34. It was fielded in three versions, horse-towed, motor-towed and the infantry version seen here. A modified version of this gun was installed in the 35(t) tank. **Above right:** The 4.7cm gun in its mount on the Panzerjäger I. (Parker)

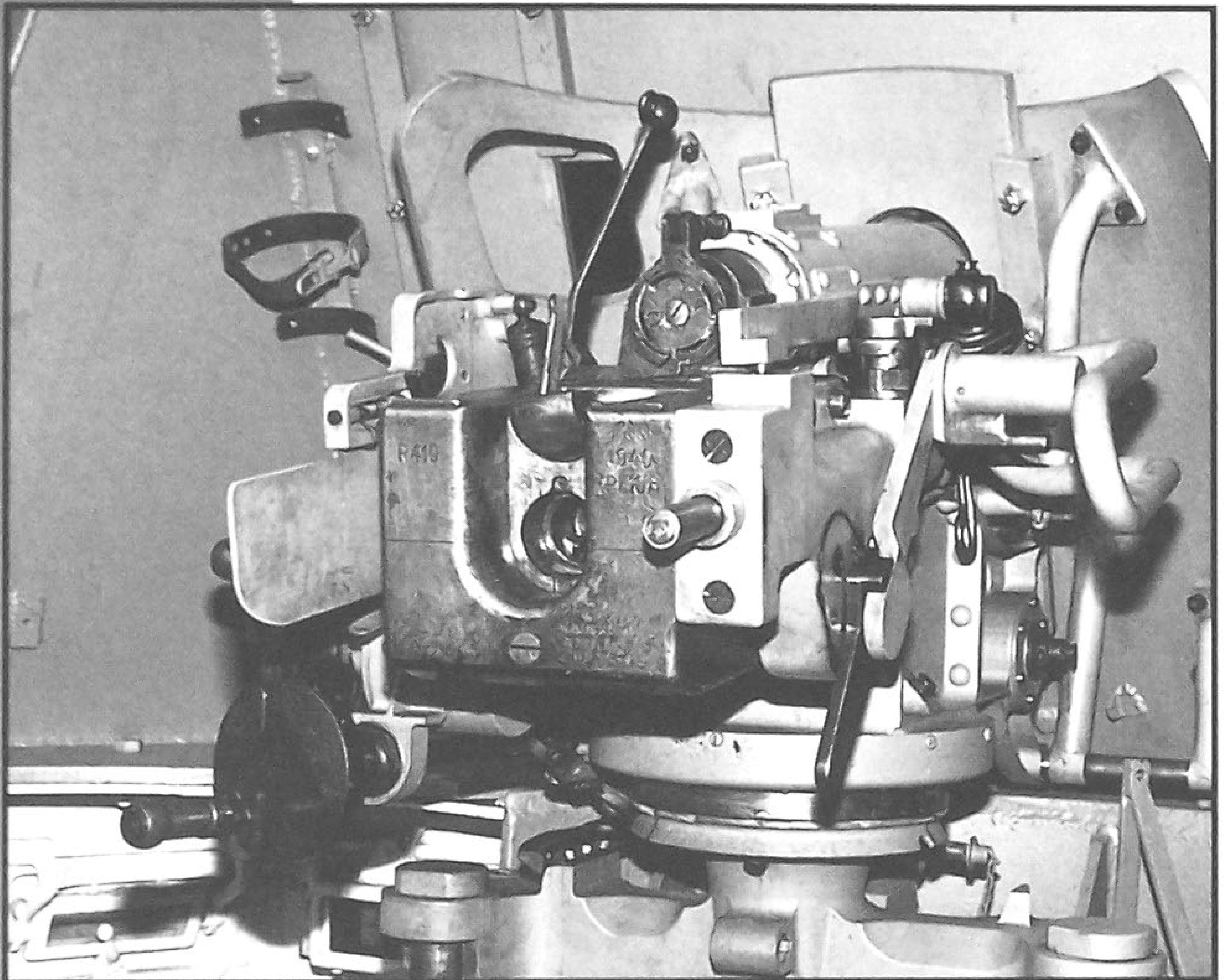


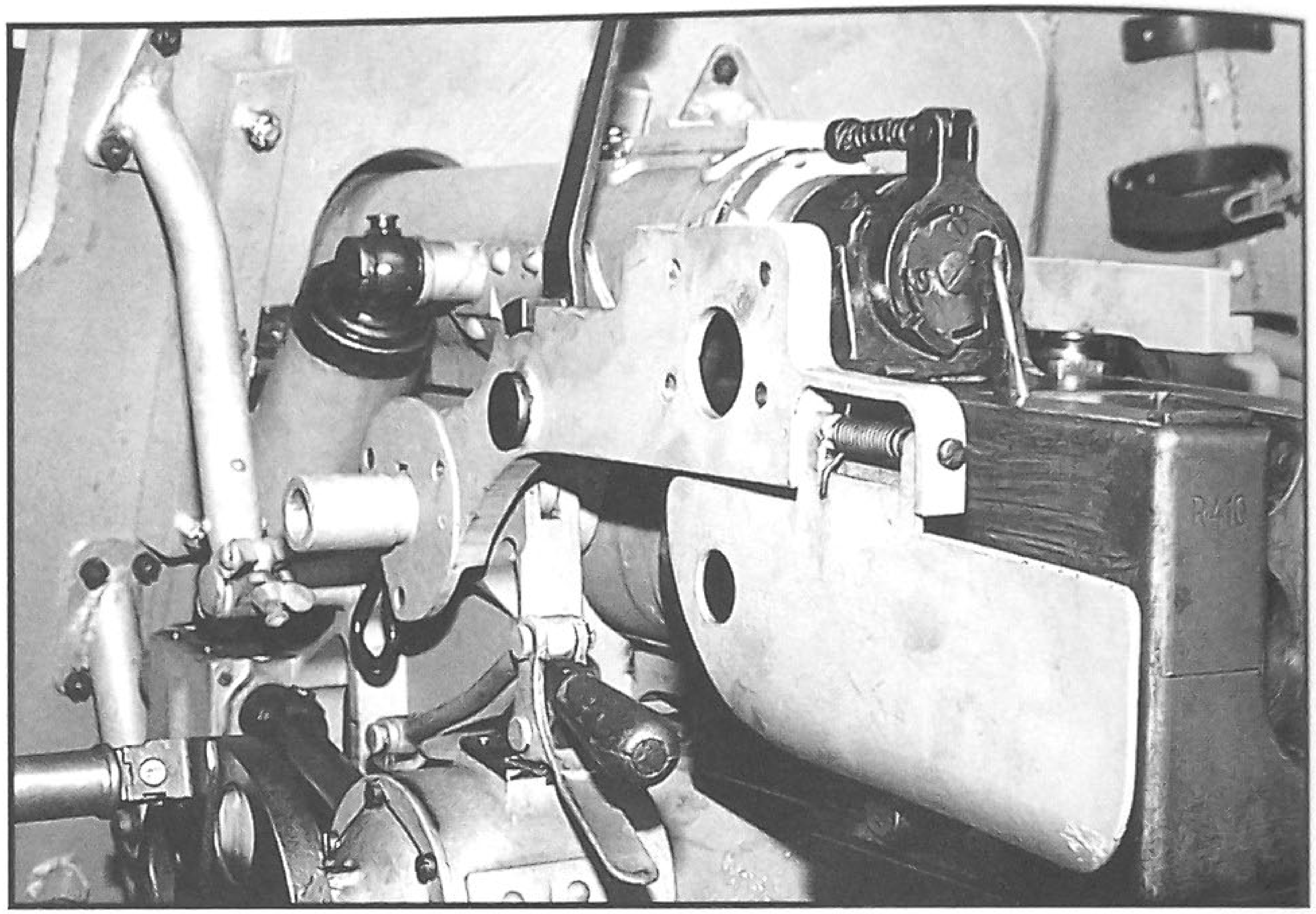


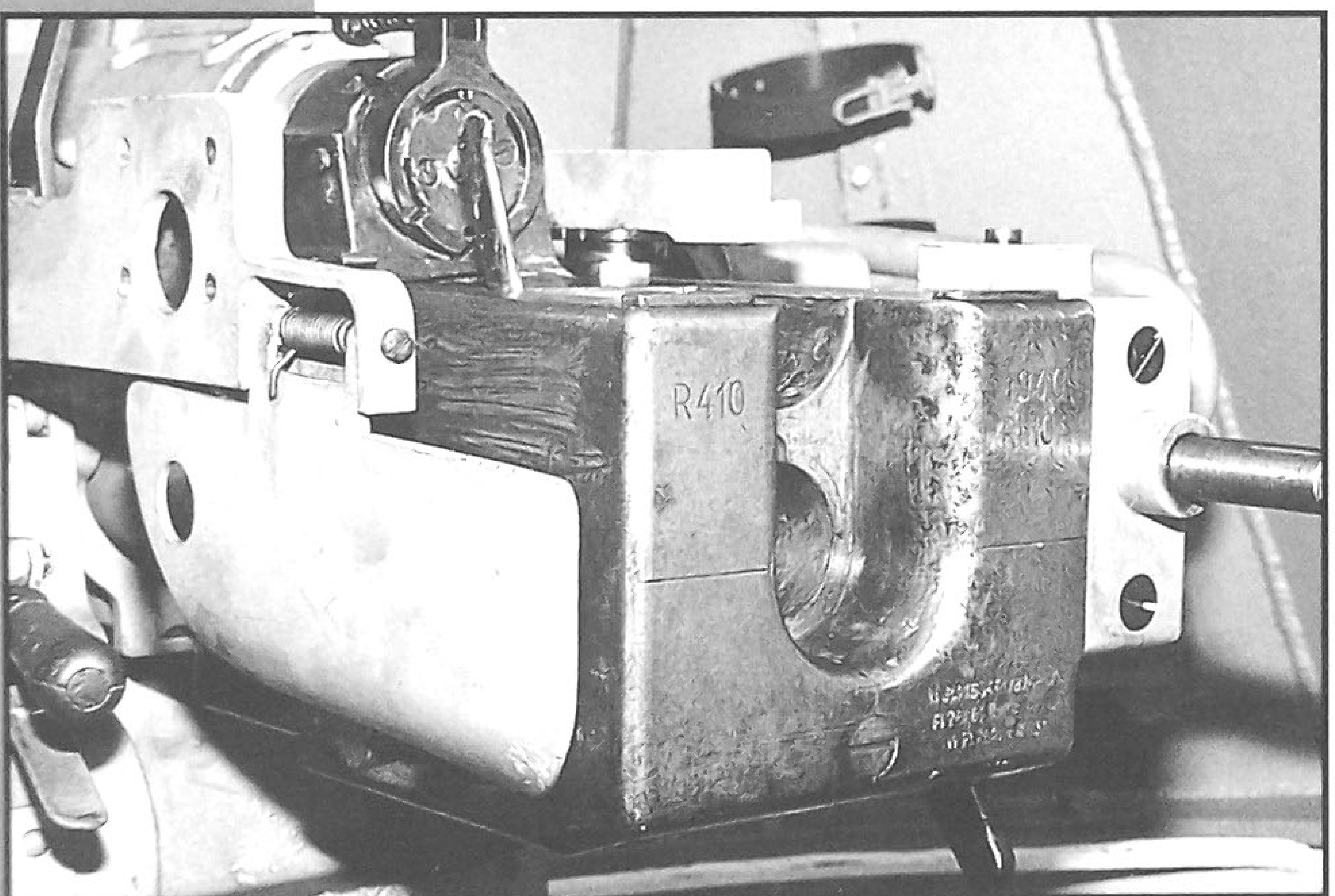


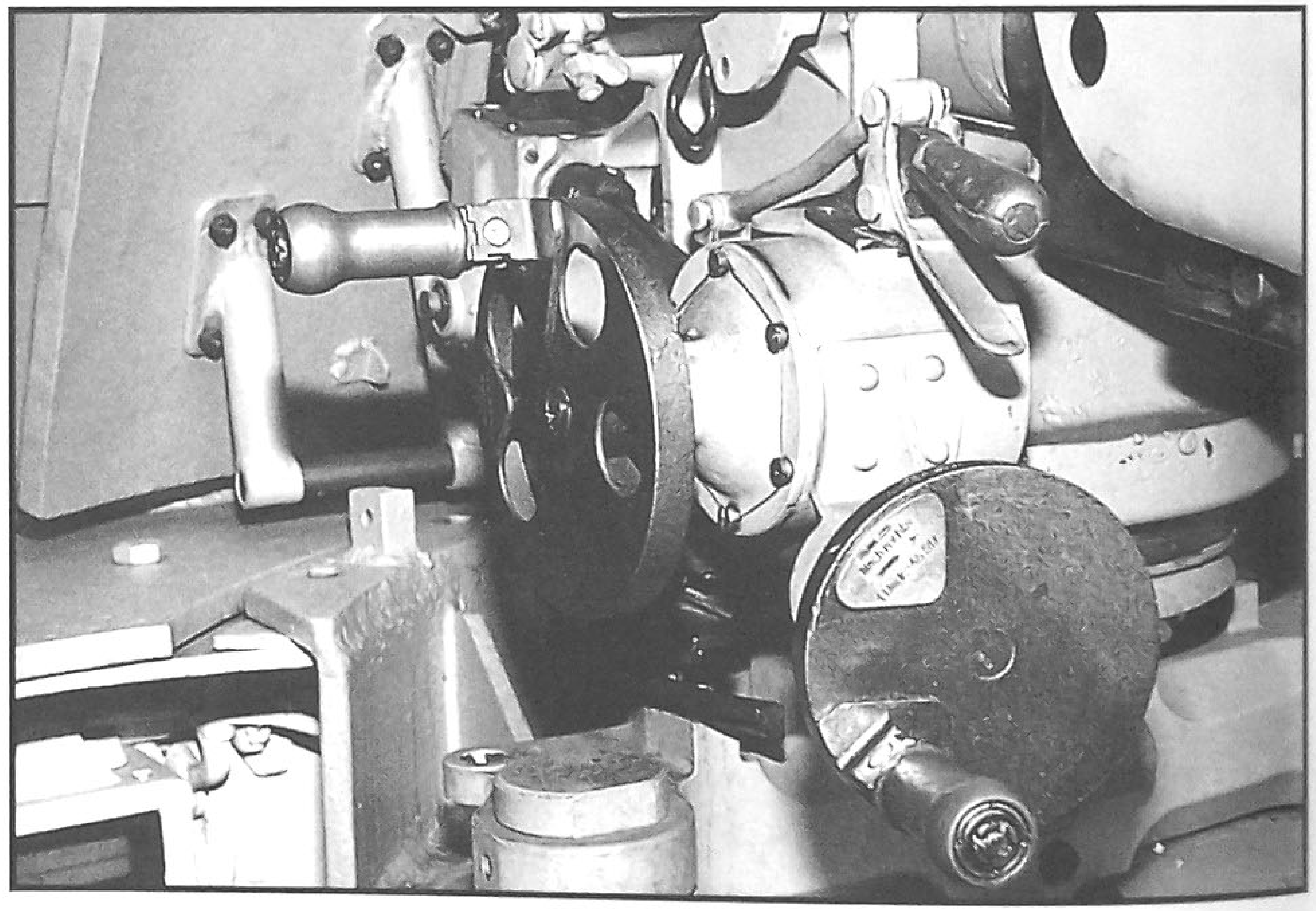


This sequence depicts details of the 4.7cm gun. The curved bracket connecting the barrel with the recuperator housing still retains its travel lock fitting. This engaged a locking bar on the towed mount. The small bracket on the top of the recuperator was also part of the locking mechanism. No travel lock was ever utilized on the Panzerjäger I. The muzzle brake was of a novel design, cast in two interlocking parts.

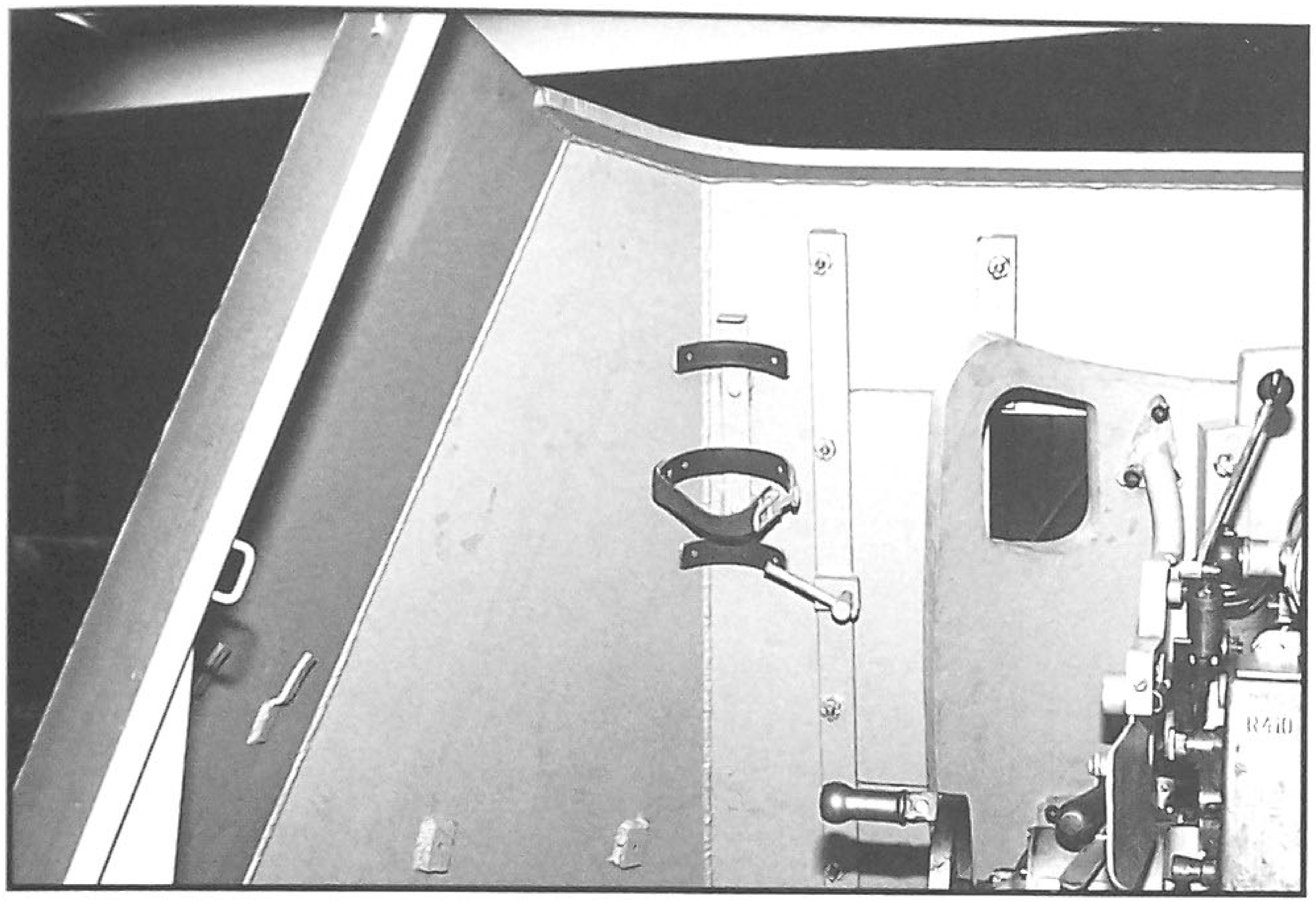


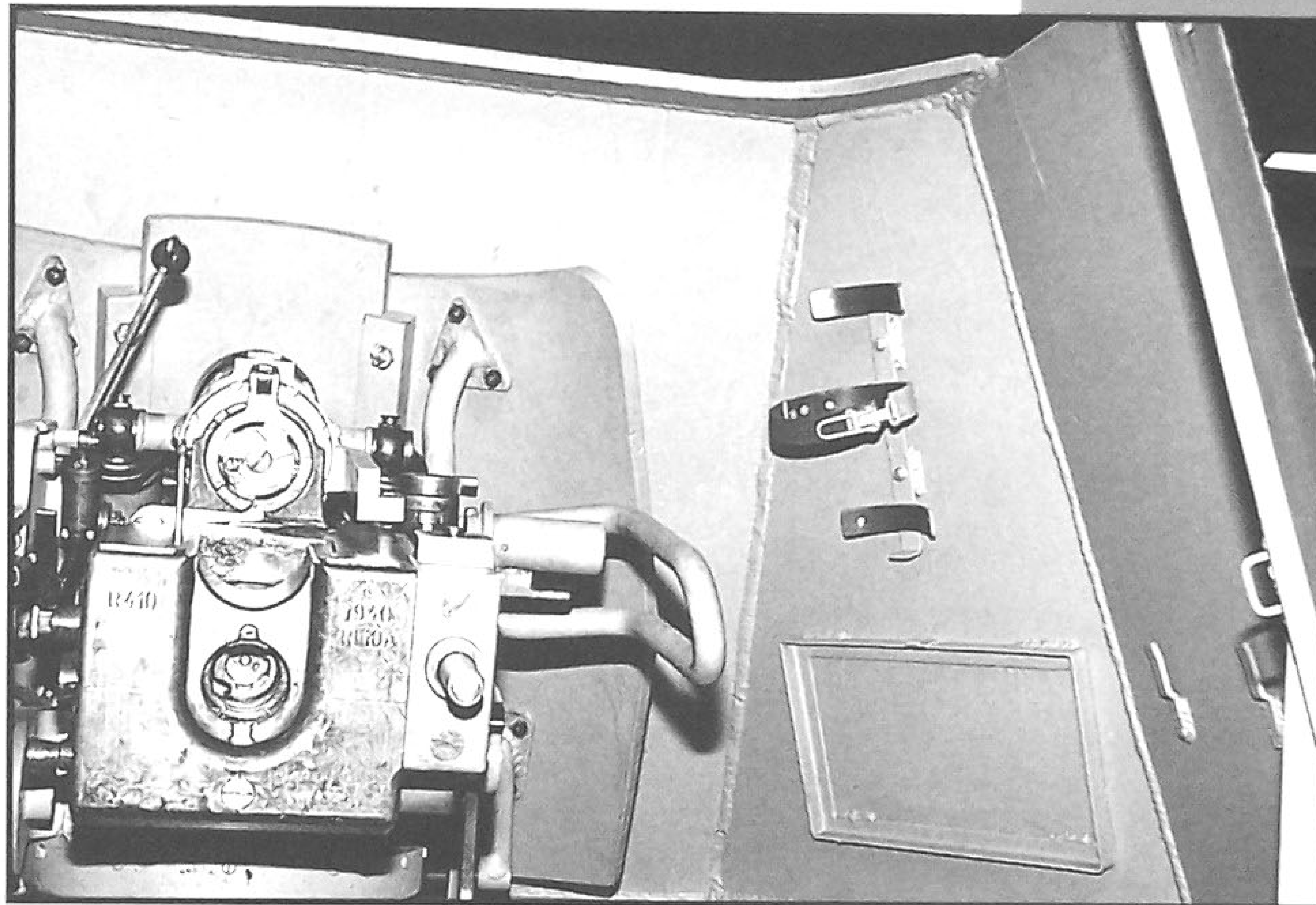


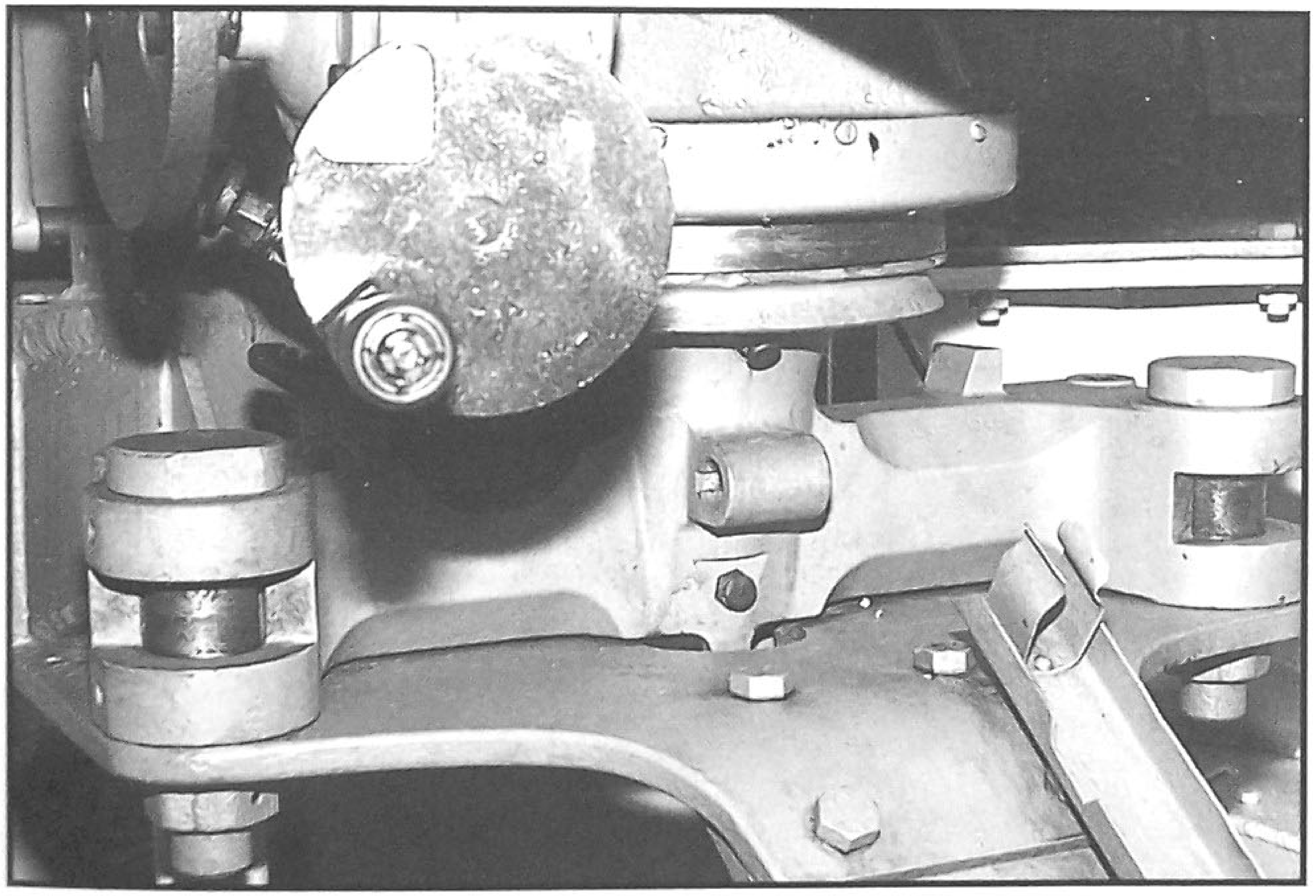


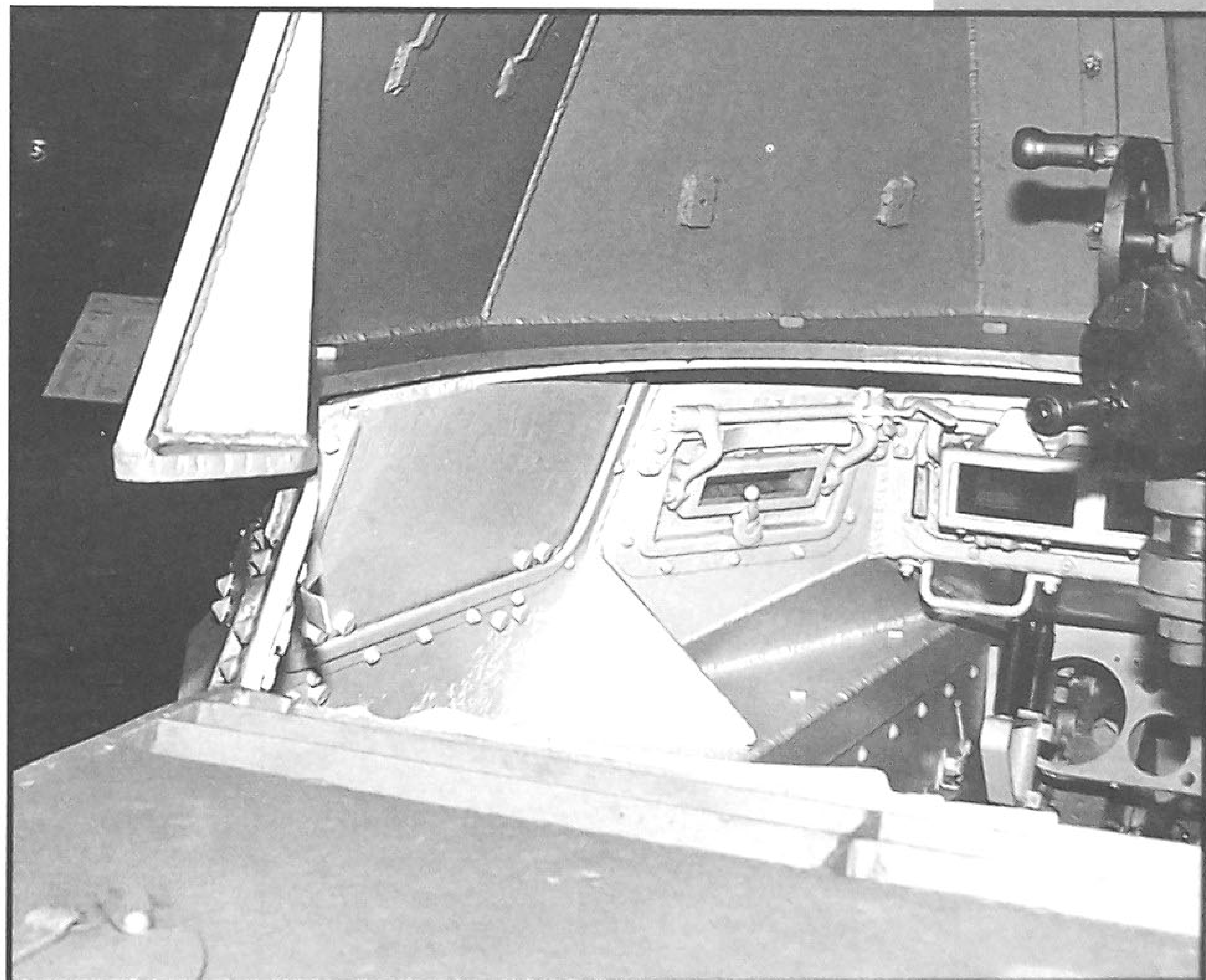


Top left: An overall view of the 4.7cm gun from the rear. The long handle on the top of the gun is the trigger. **Top right:** The gun from the left side showing the metal guard and the empty post for mounting the sight (left of center). **Left:** Details of the breech with the manufacturer's mark in evidence. **Above right:** The elevation hand wheel (left) and the traversing hand wheel (right).



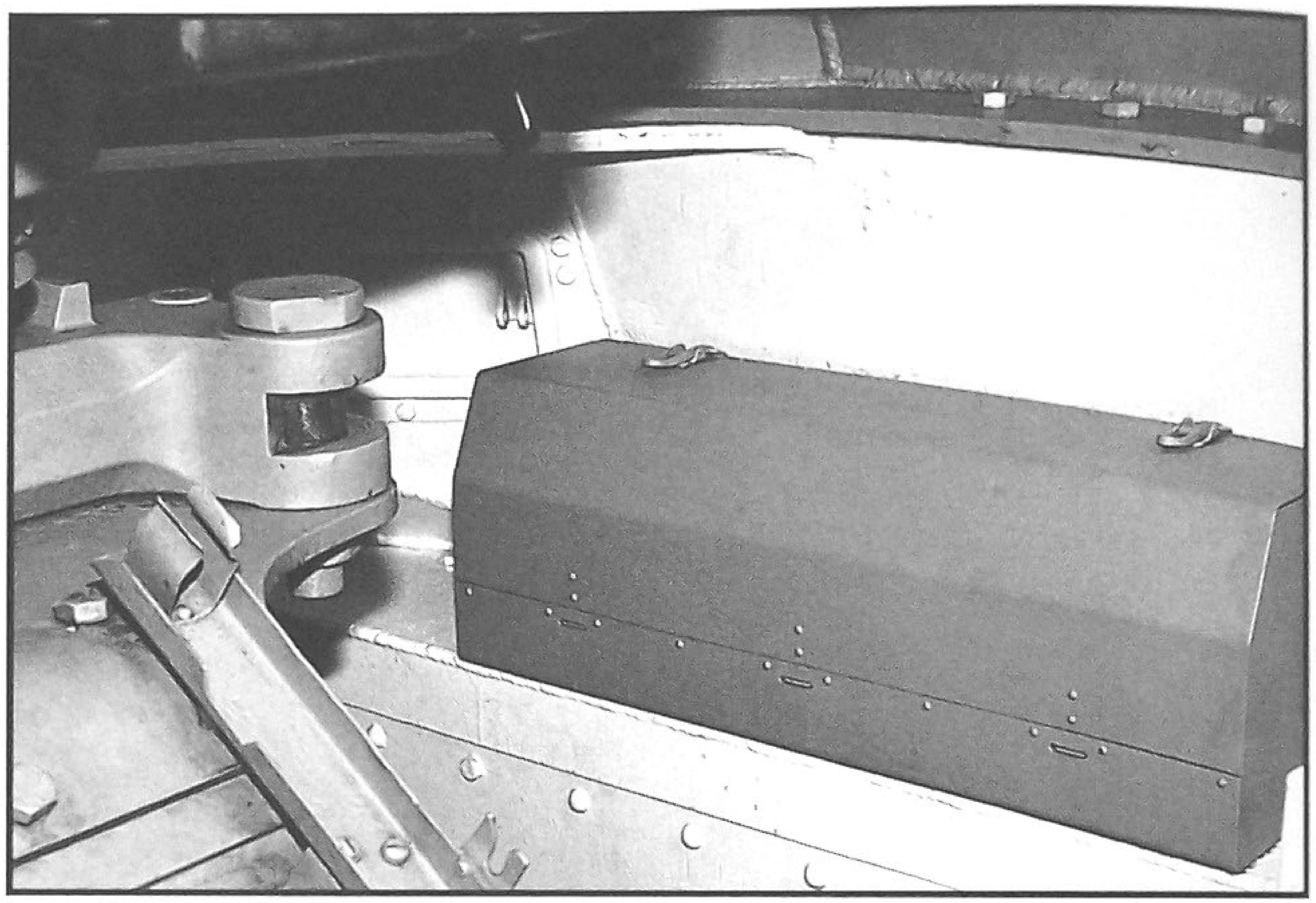


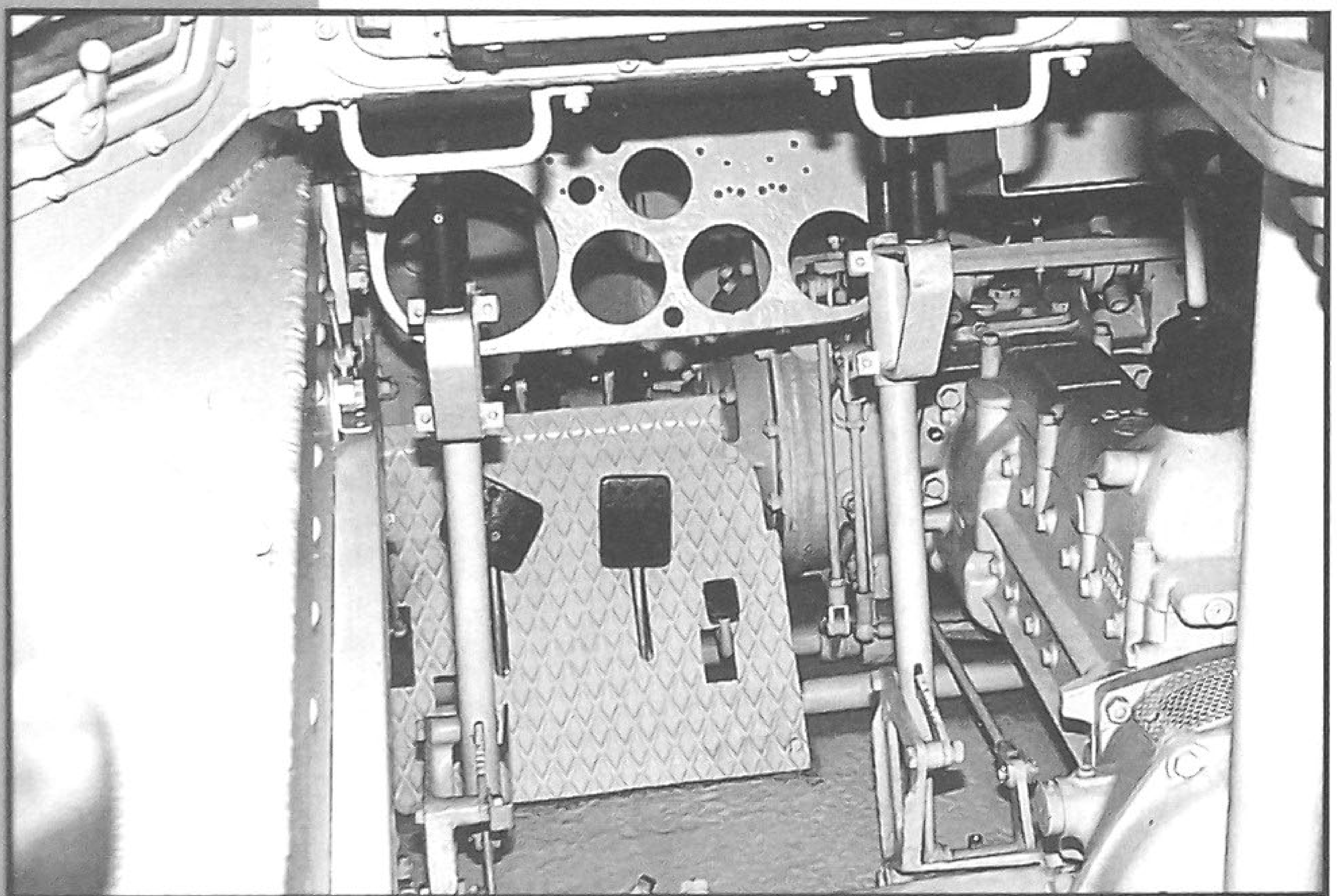


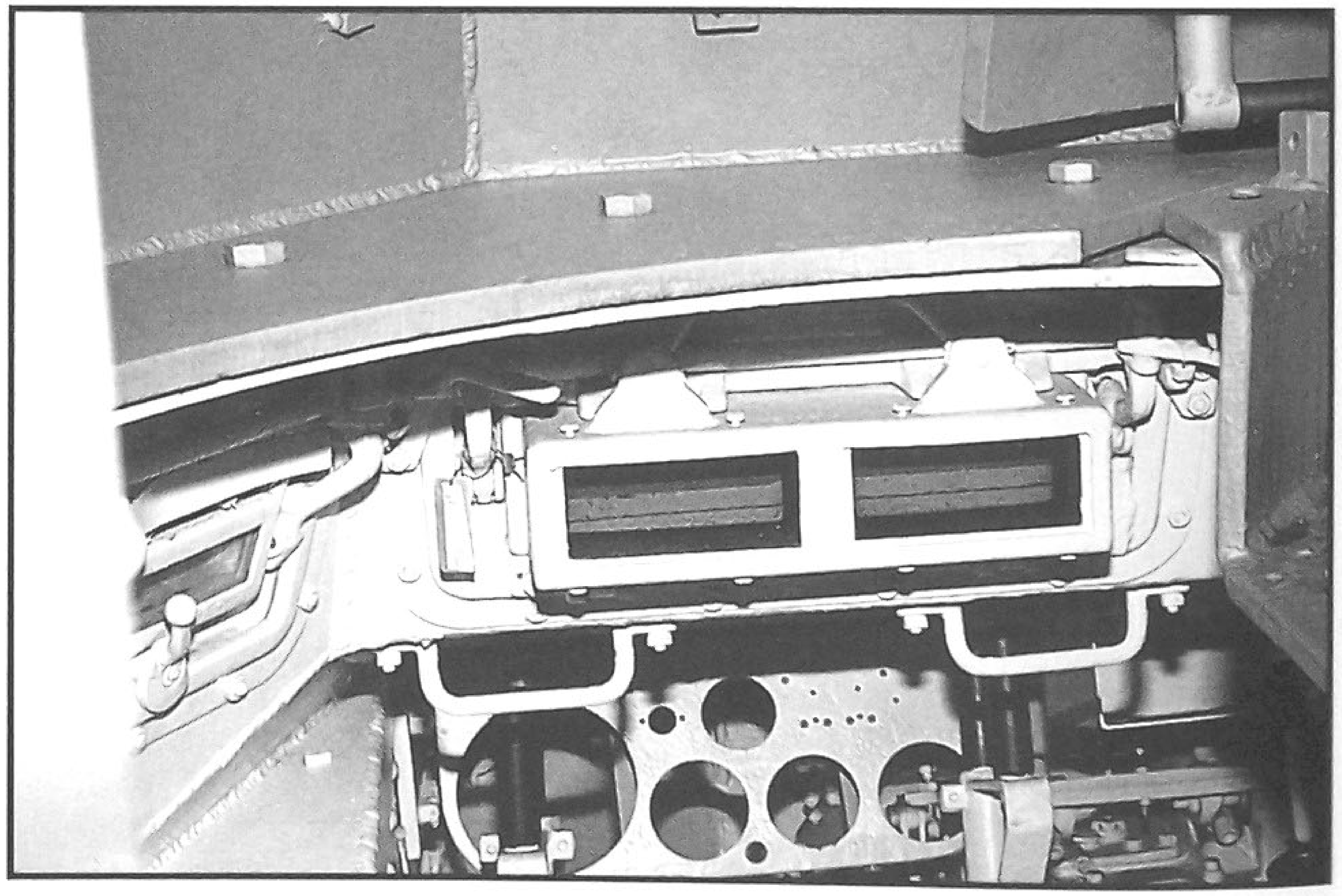


Top left and top right: The shield on the either side of the gun. The leather straps were used to secure gas mask canisters. The exterior shield was 13mm thick; while the interior shield was 14.5mm. The empty bracket on the right side of the interior once held the first-aid box. **Above:** The base of the 4.7cm gun was placed directly on the interior mount and still retains its locking lugs for its trails. **Right:** To unify the lower superstructure, the exterior hatch was welded in place.

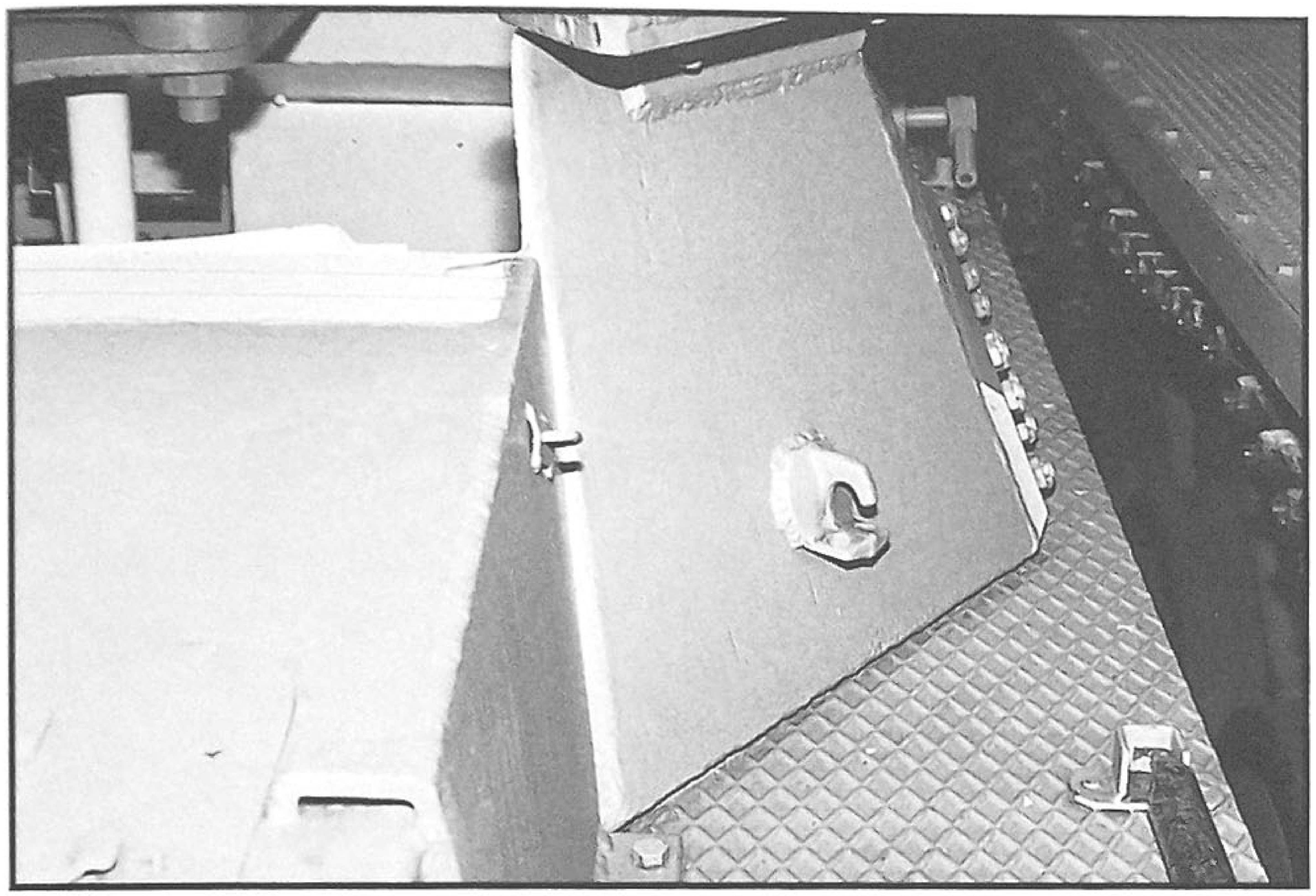


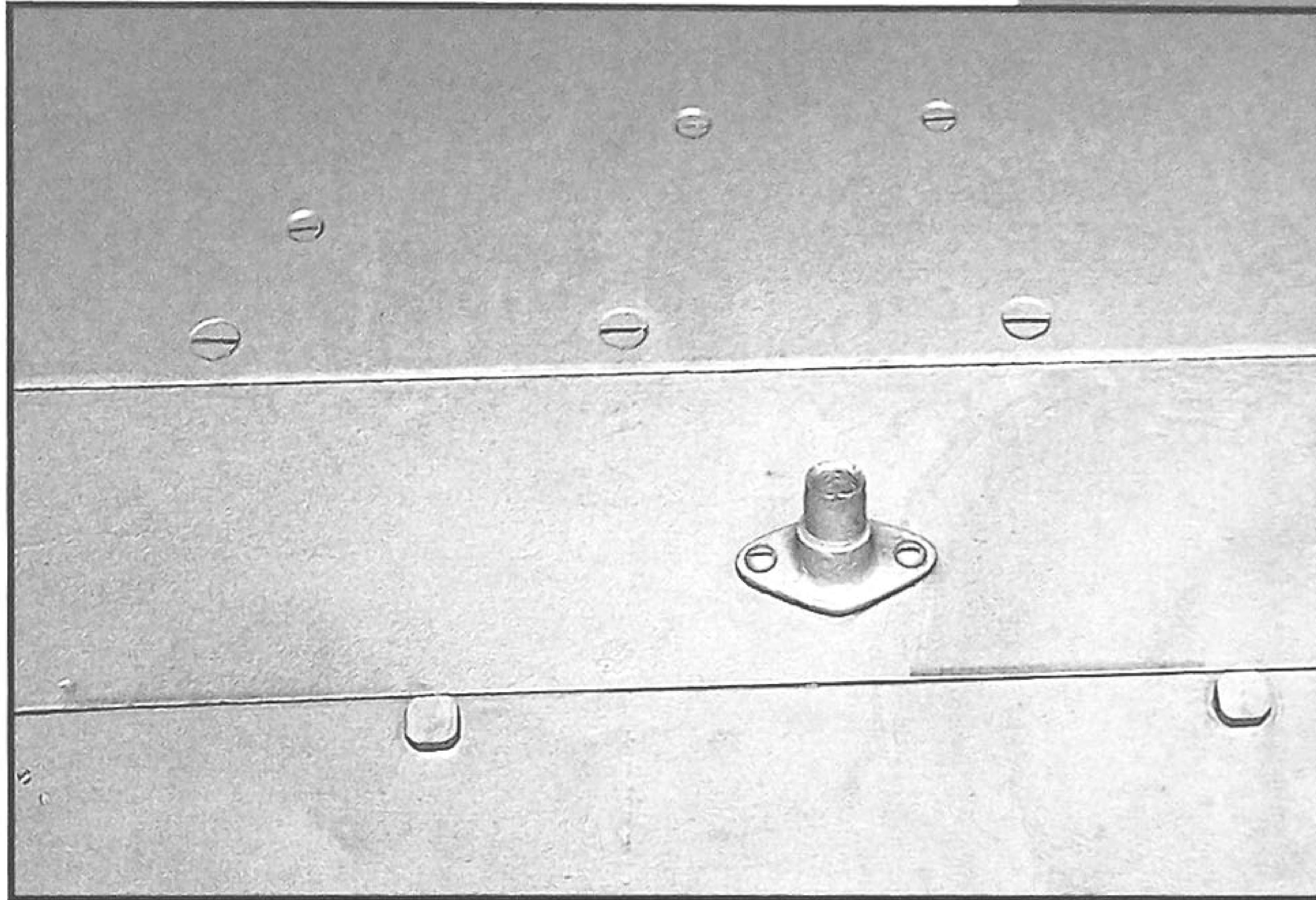


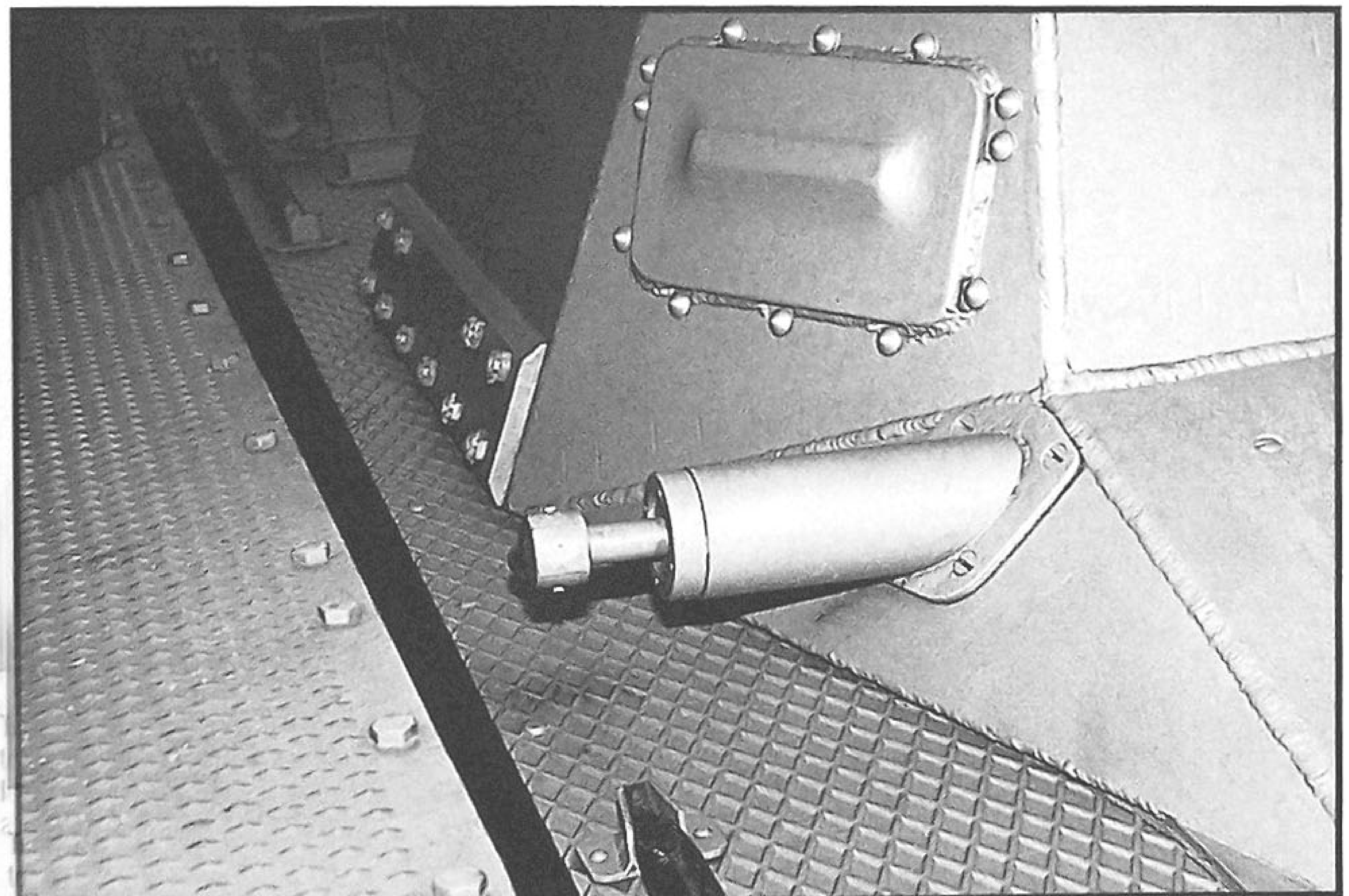


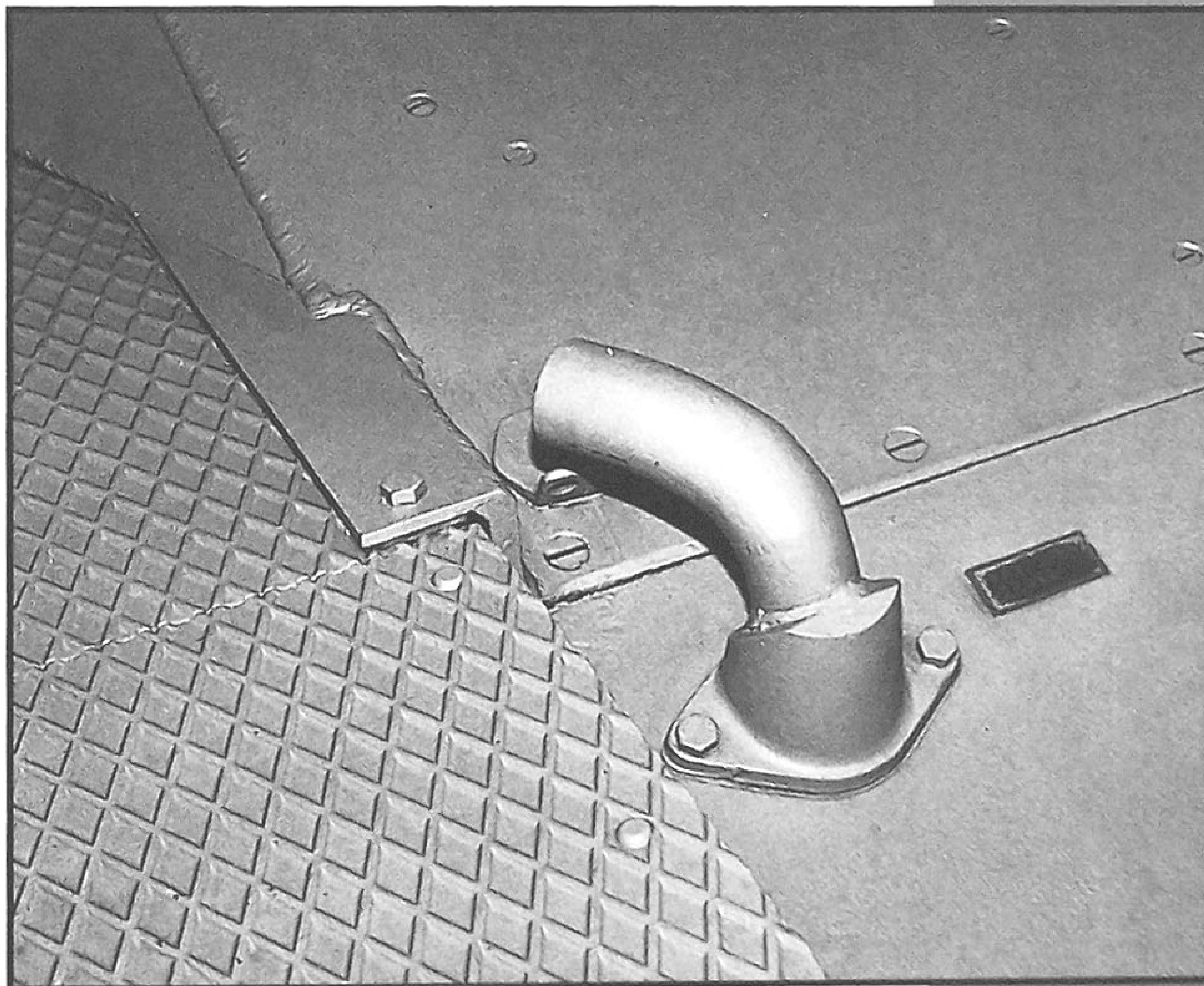


Top left: This sliding door allowed expansion of the shield opening for greater visibility when sighting. **Top right:** This vehicle is one of those captured by the British in North Africa and later was placed on display at Aberdeen Proving Grounds. It is now undergoing restoration work at the WTS in Germany. This is one of the newly fabricated parts, the storage box for the projectiles. **Left:** The driver's controls. Replacement instrument panels are still to be found. **Above right:** A closer look at the driver's front and side vision blocks.





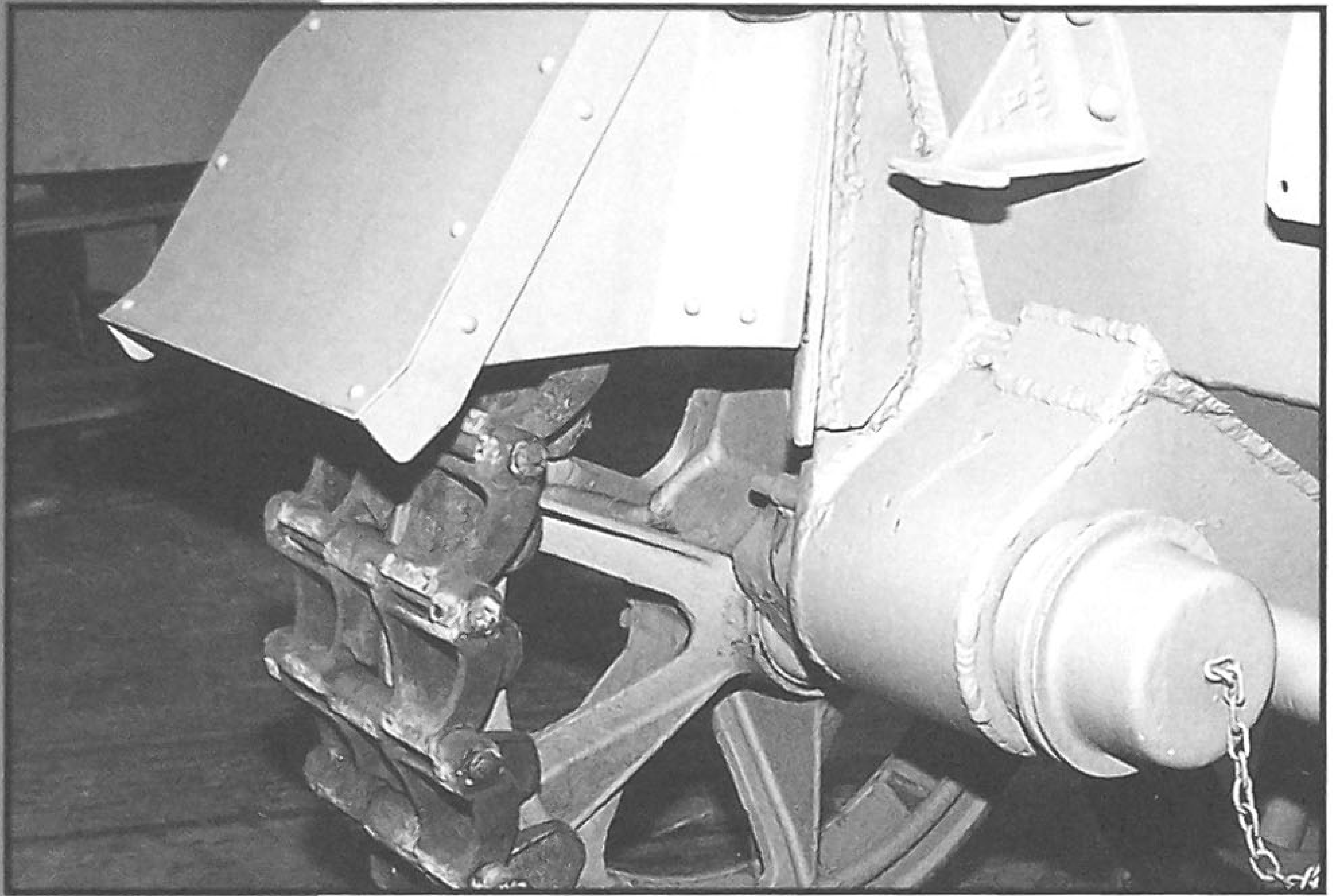


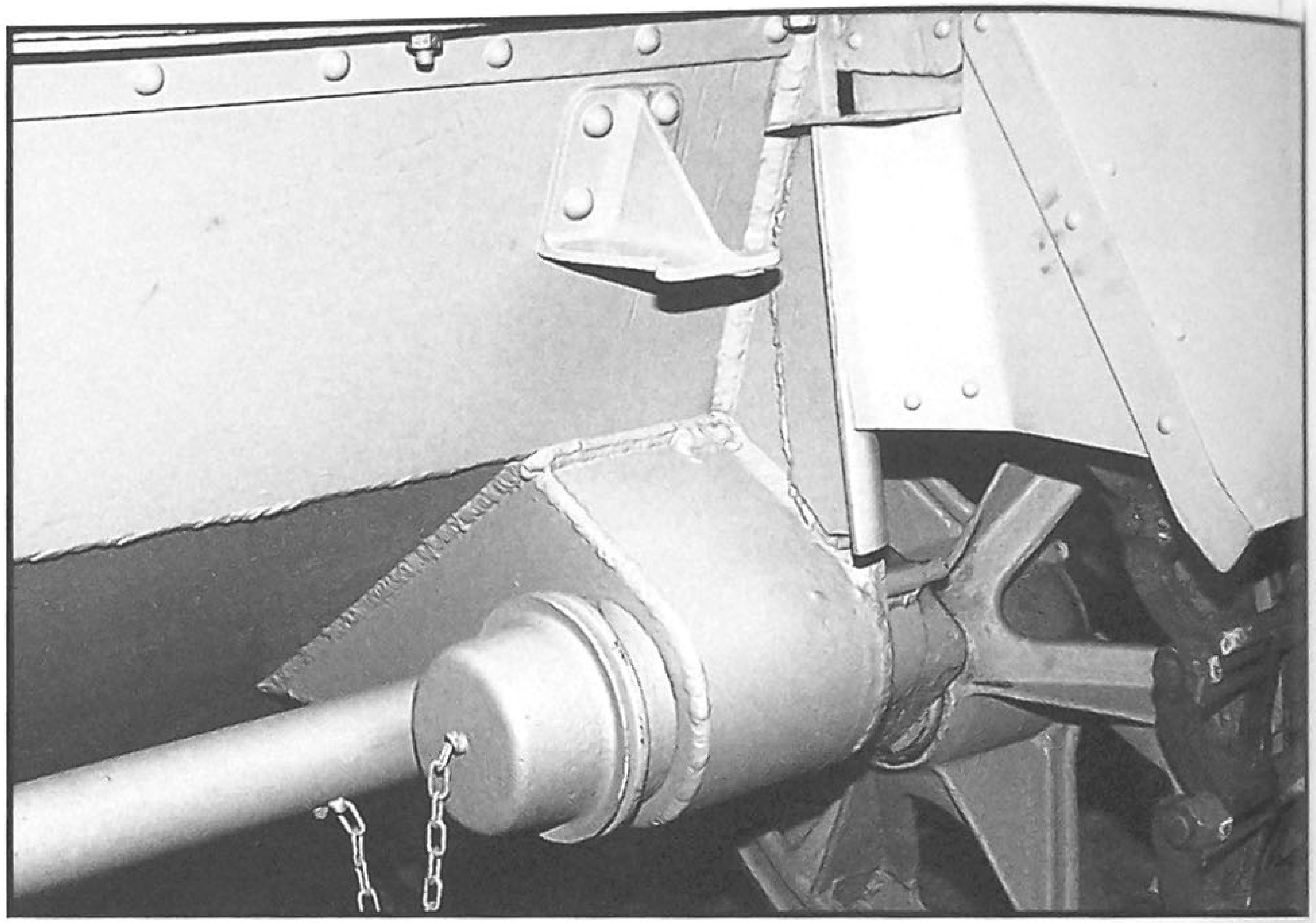


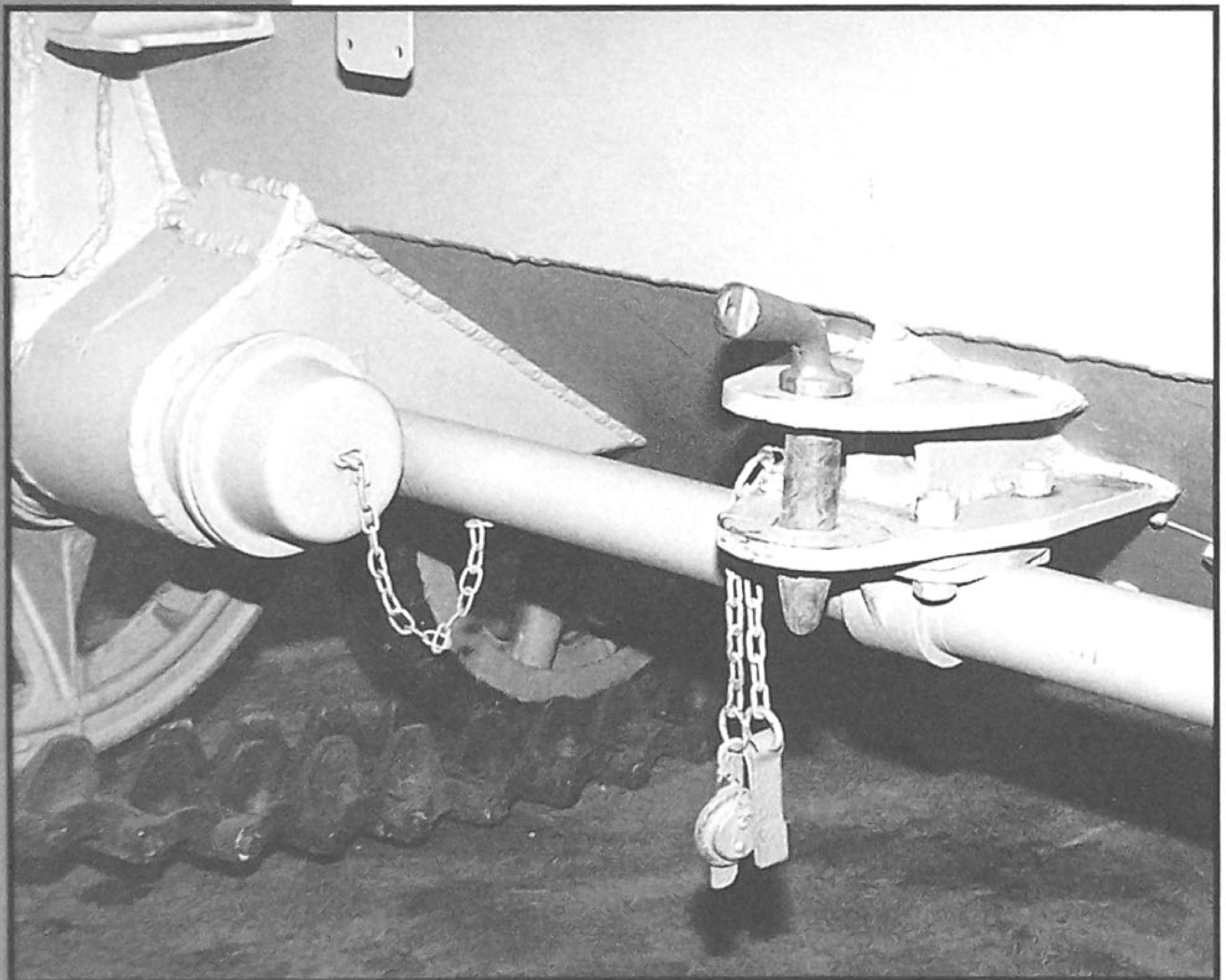
Top left: This is the right side rear of the superstructure with its attendant lifting hook. This was also a common place to mount a spare roadwheel on many vehicles. **Top right:** The empty mounting bracket for the large headlight. **Above left:** The swiveling base for the vehicle antenna. **Right:** The transmission ventilation tube. This normally terminated with a section of hose, which was laid along the length of the right fender.

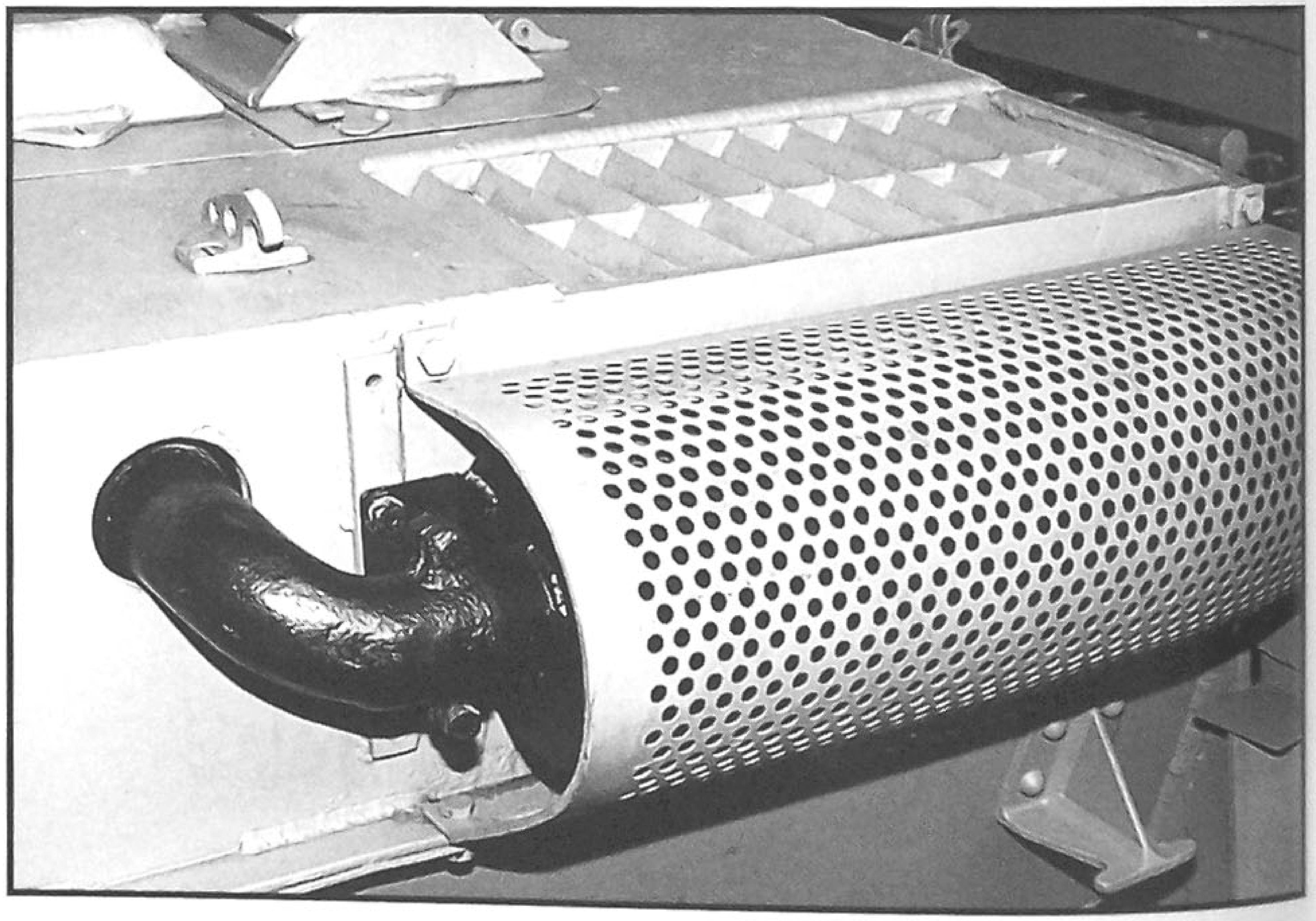


Number III is again shown here during another fire mission that same week. The gun number is marked on the front of the hull and is also seen on the ammunition carrier to the left. (BA)

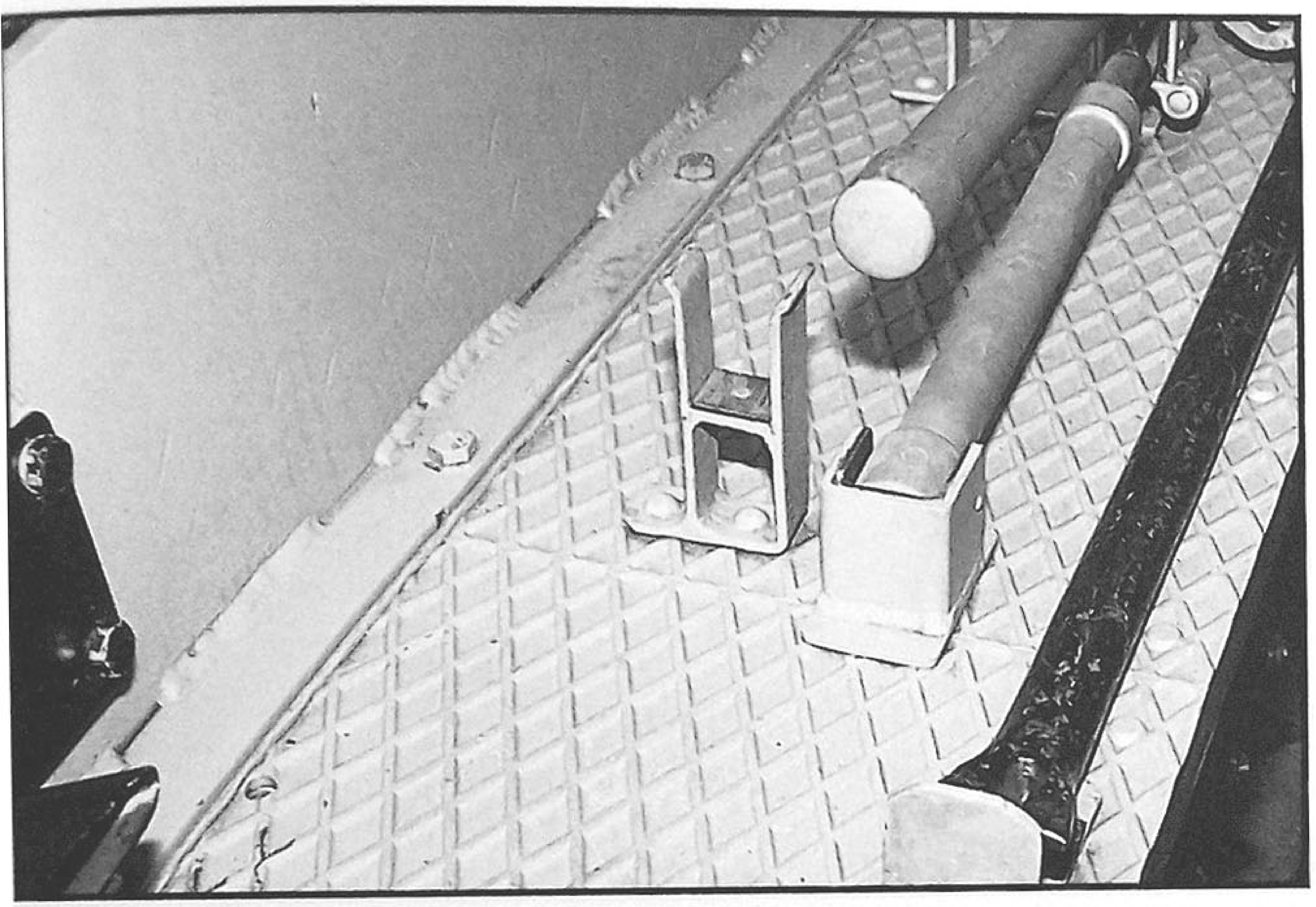


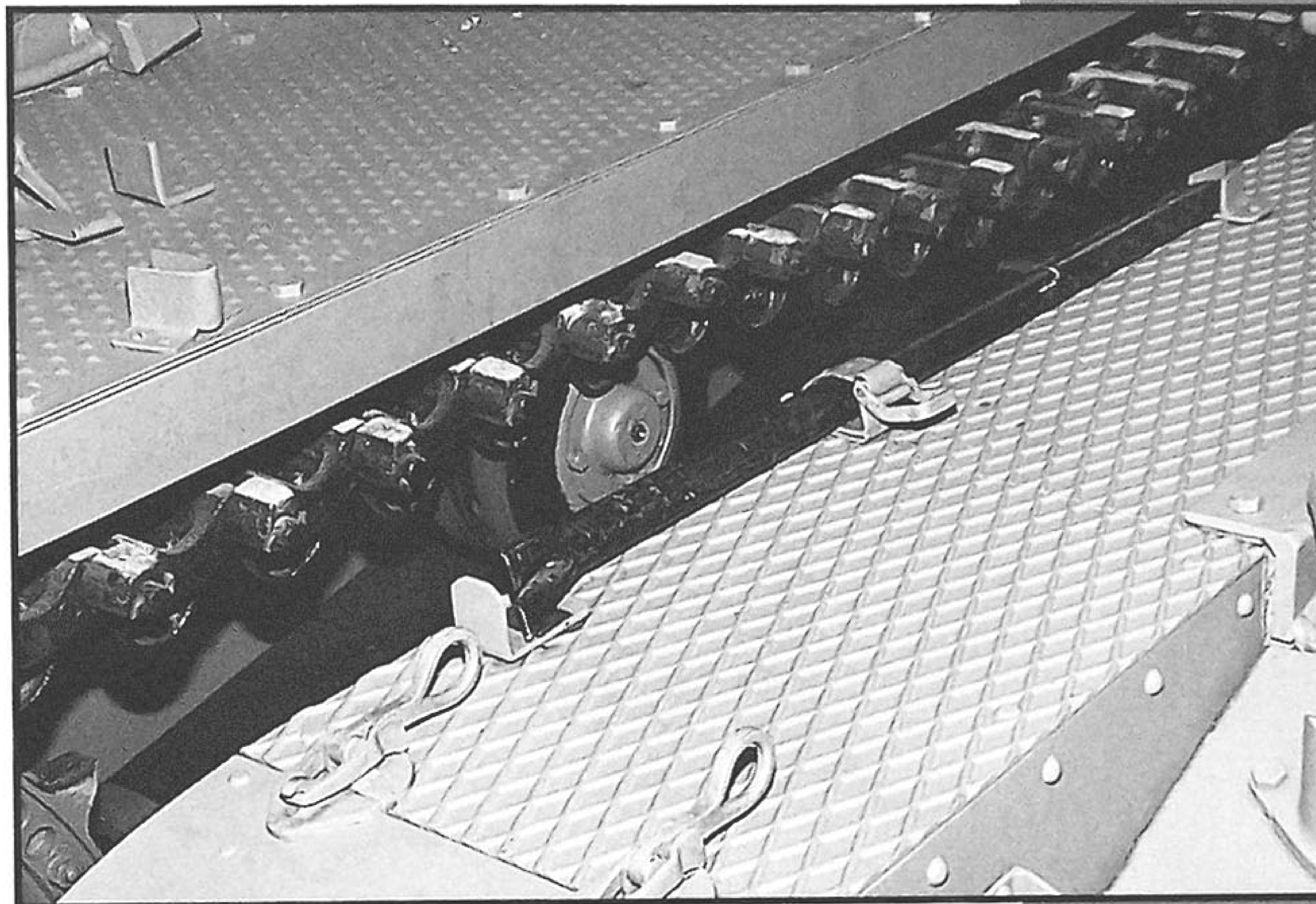


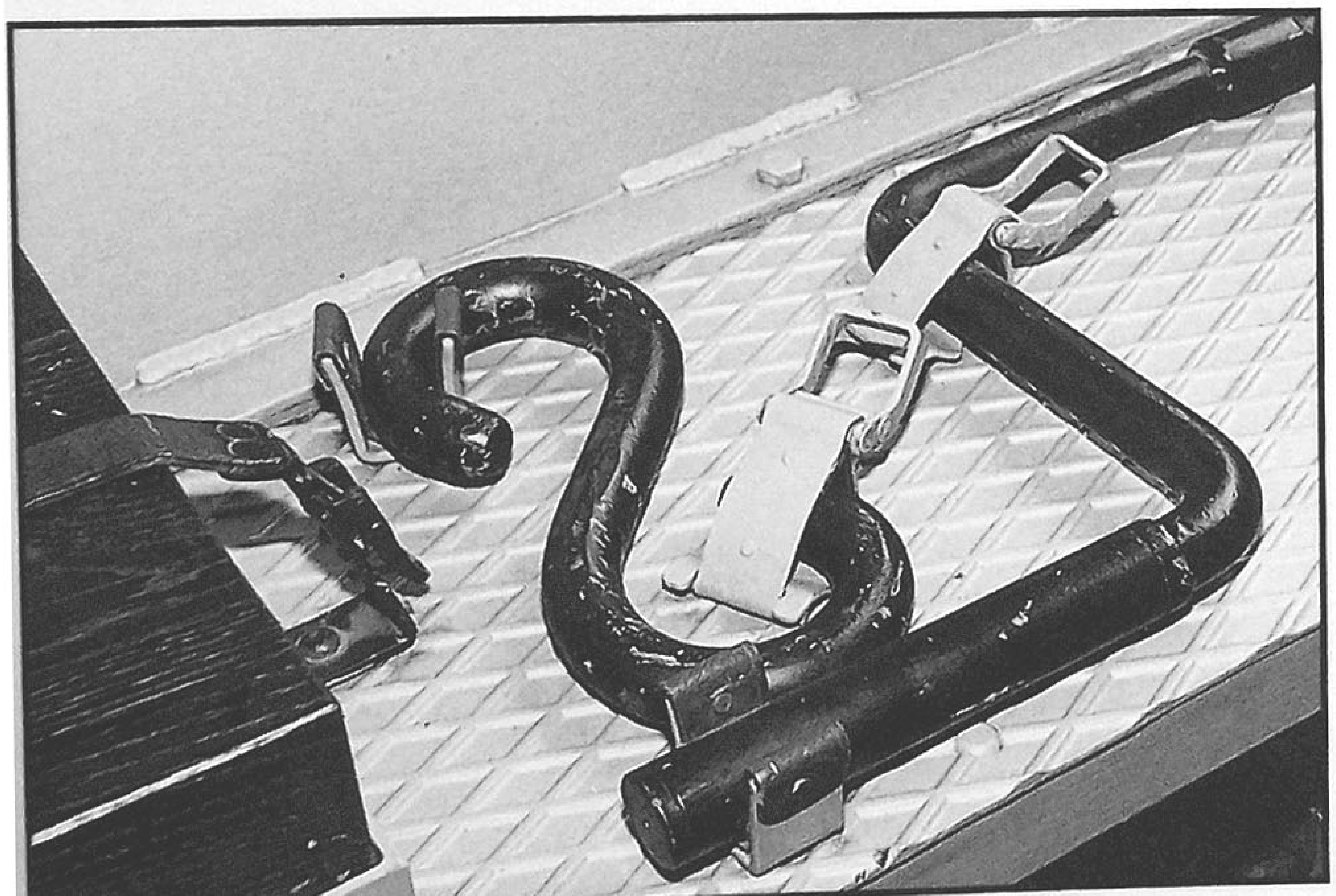


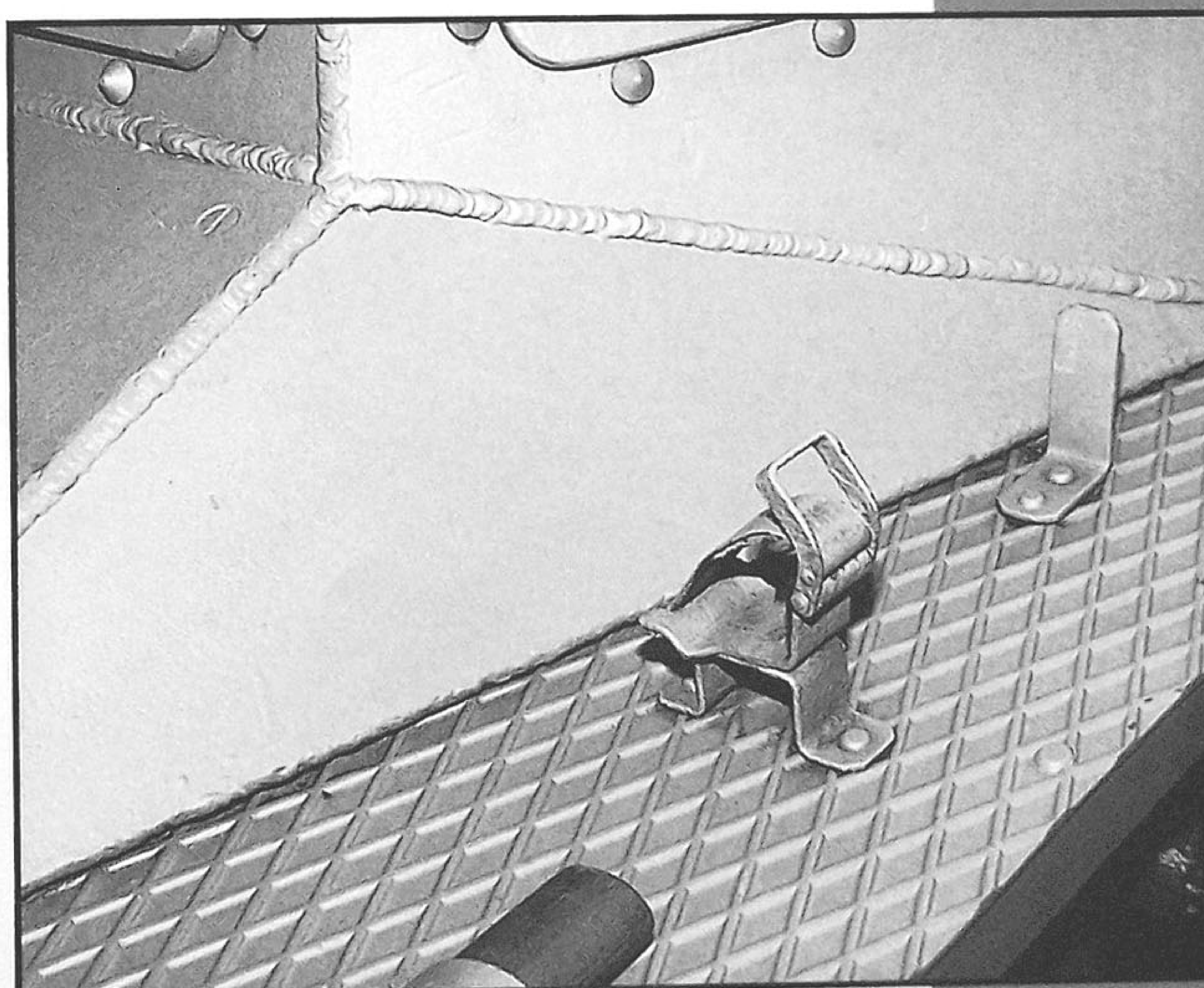


Top left and right: The rear idler adjusting mechanisms. Each had a steel cap that covered the adjustment bolt to protect it from dust and dirt. The chains are secured to the lower reinforcing bar and prevent the caps from becoming lost. **Left:** The rear towing pintle. **Above right:** the muffler base and its distinctive perforated guard.

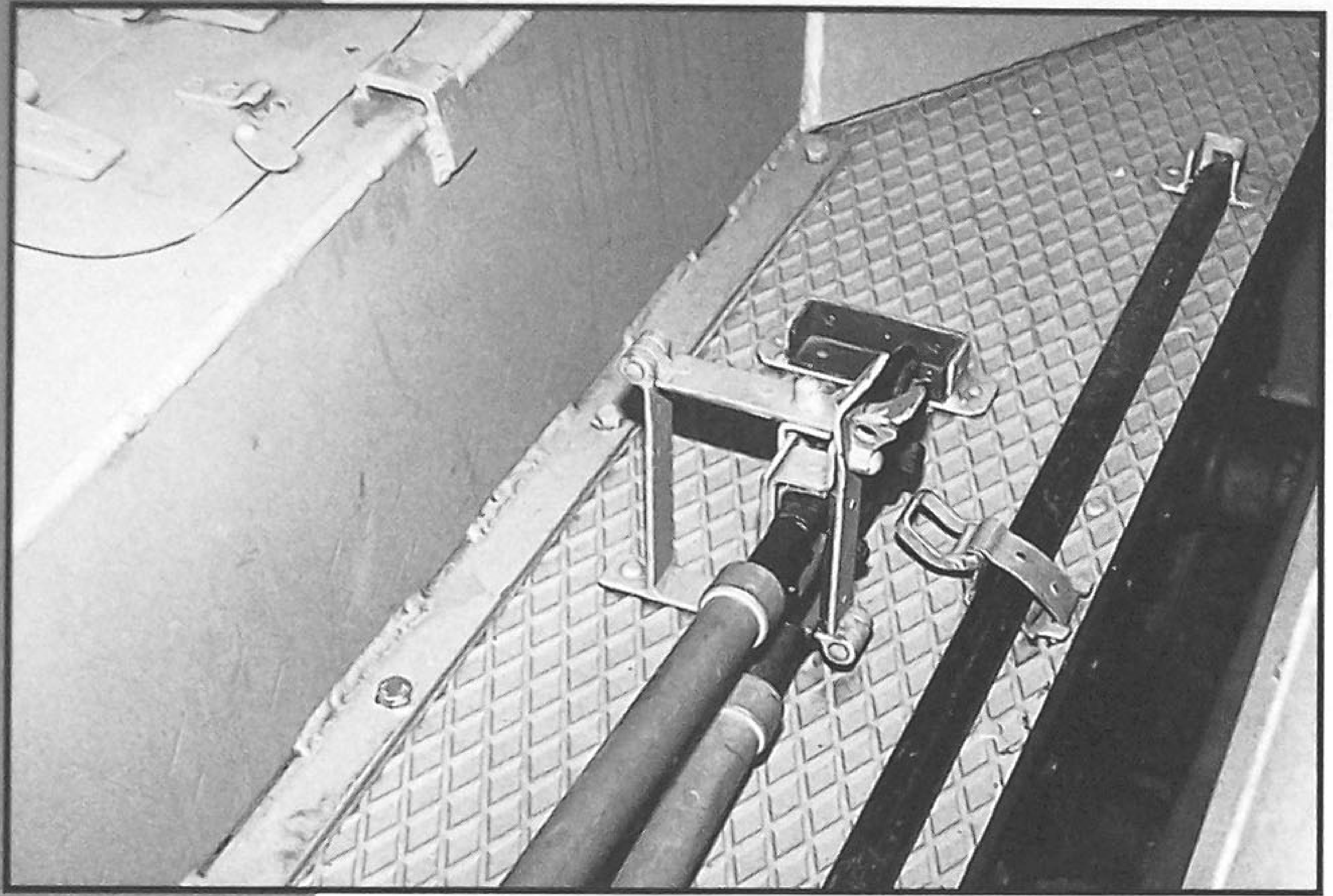
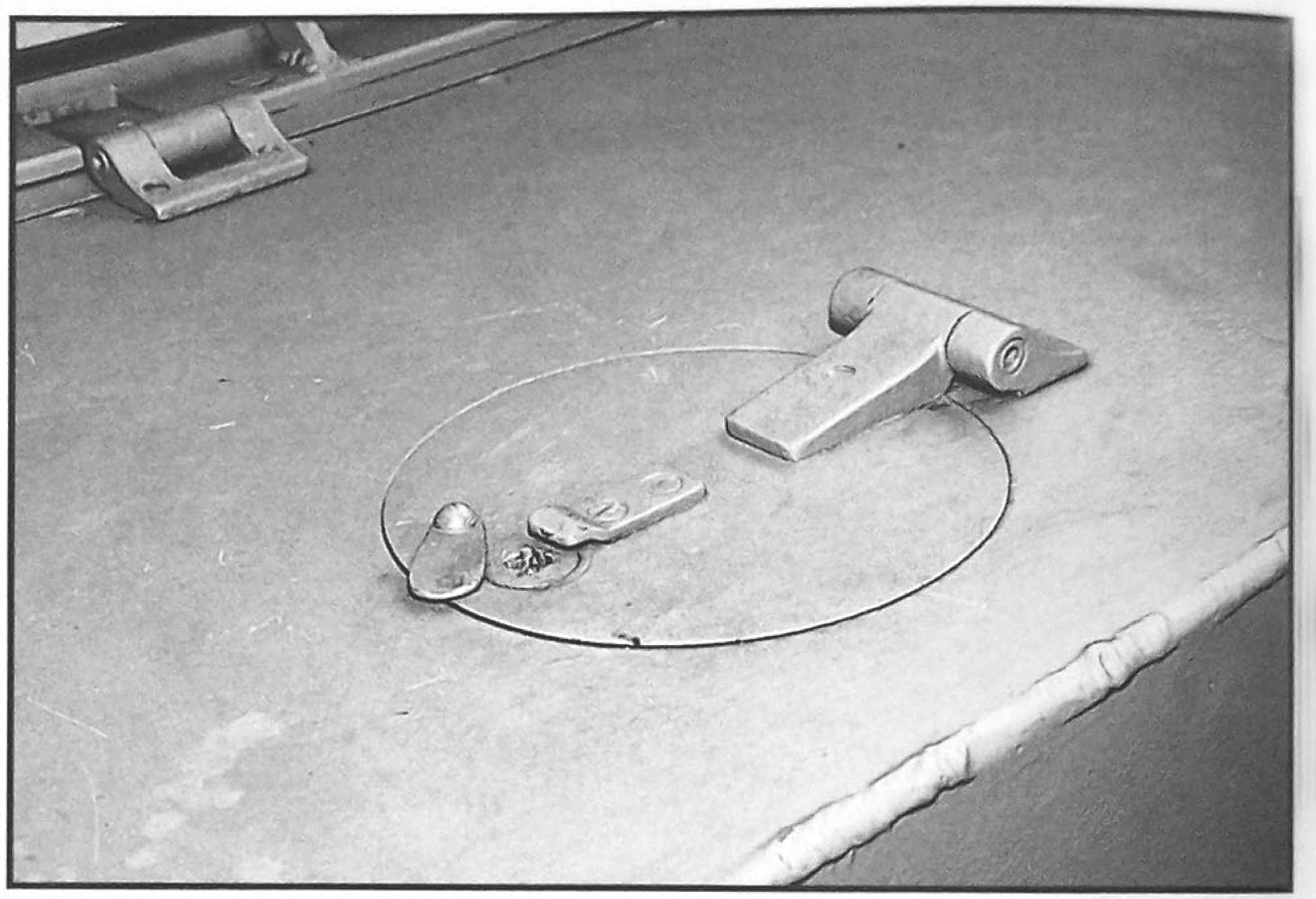
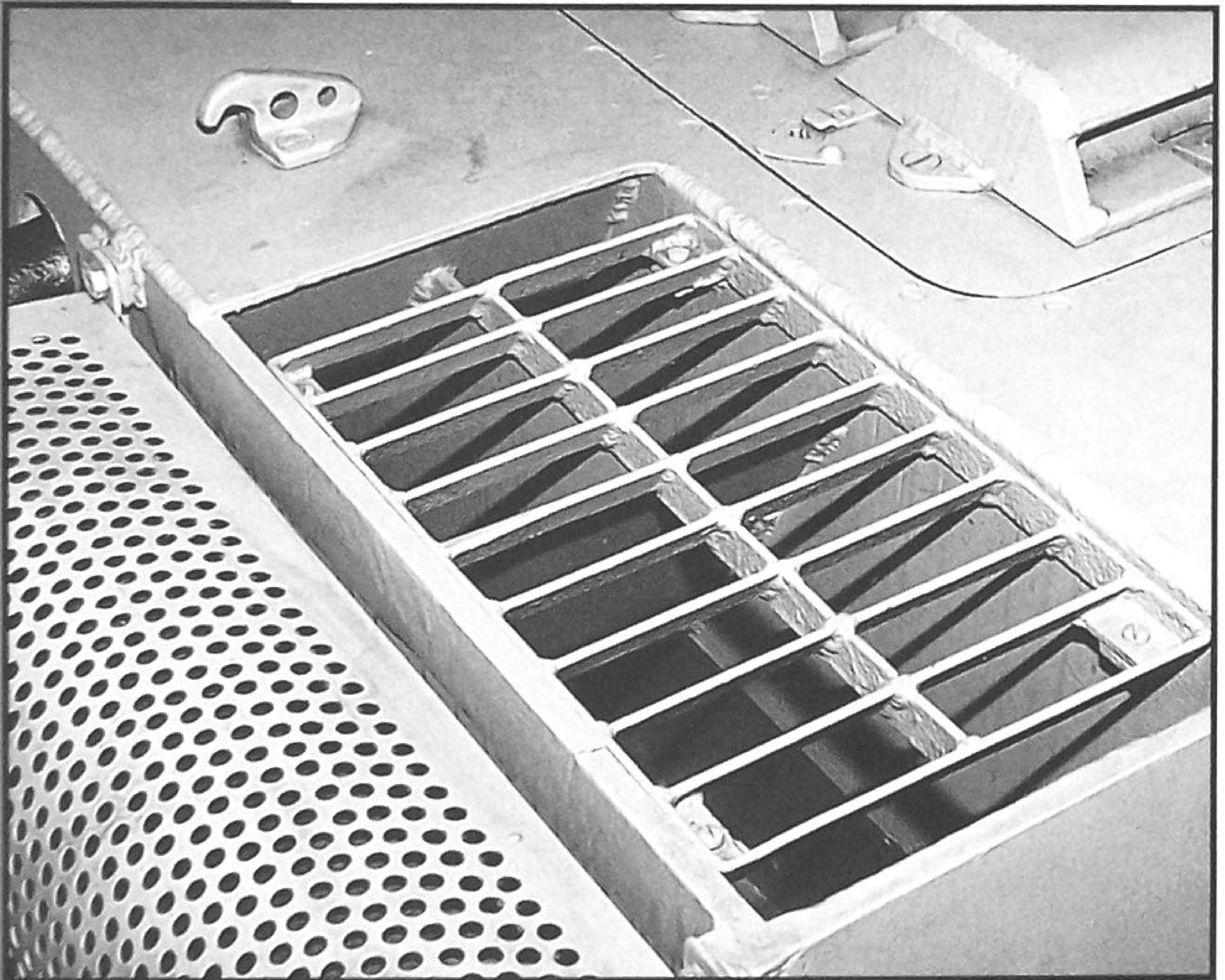
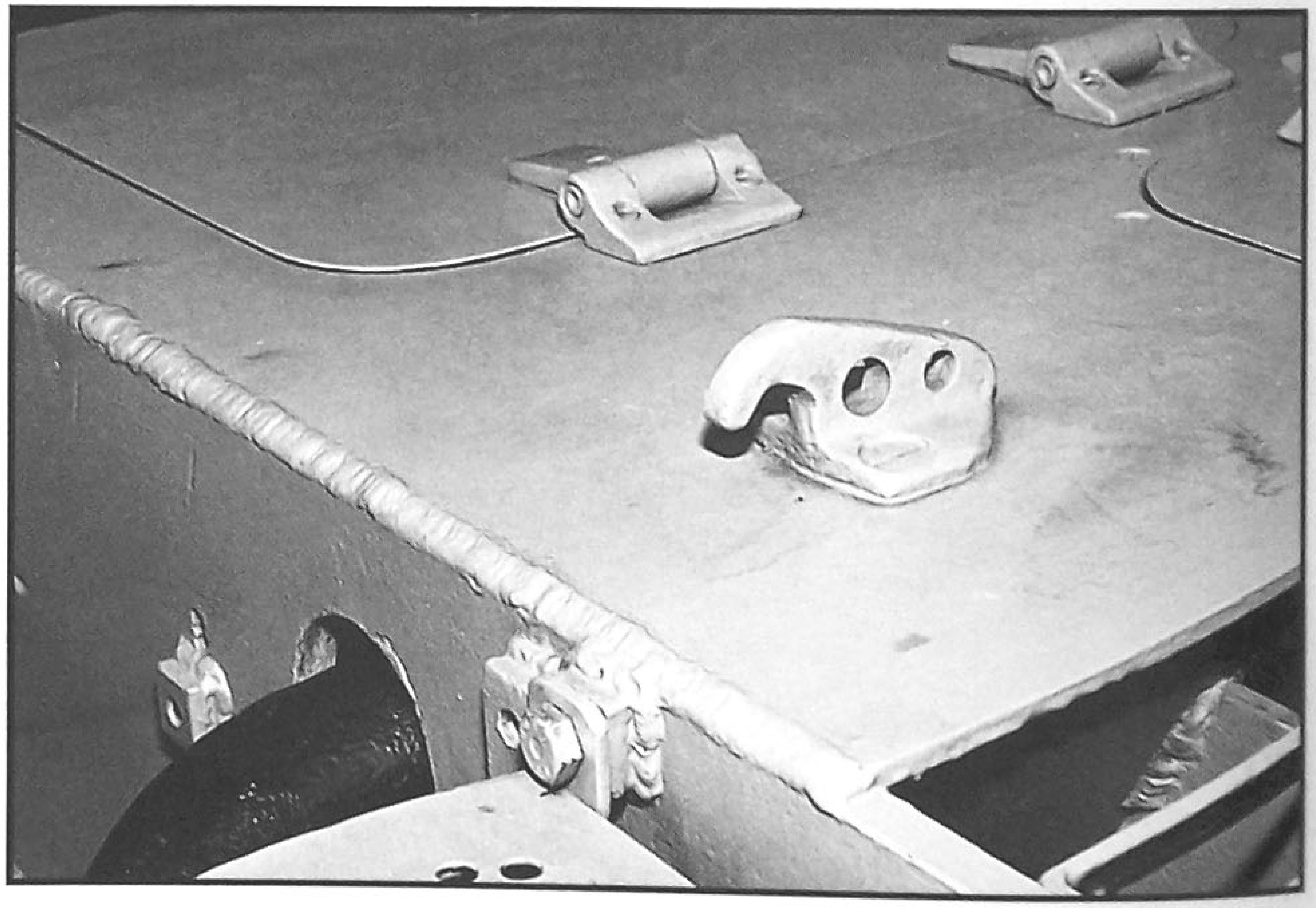




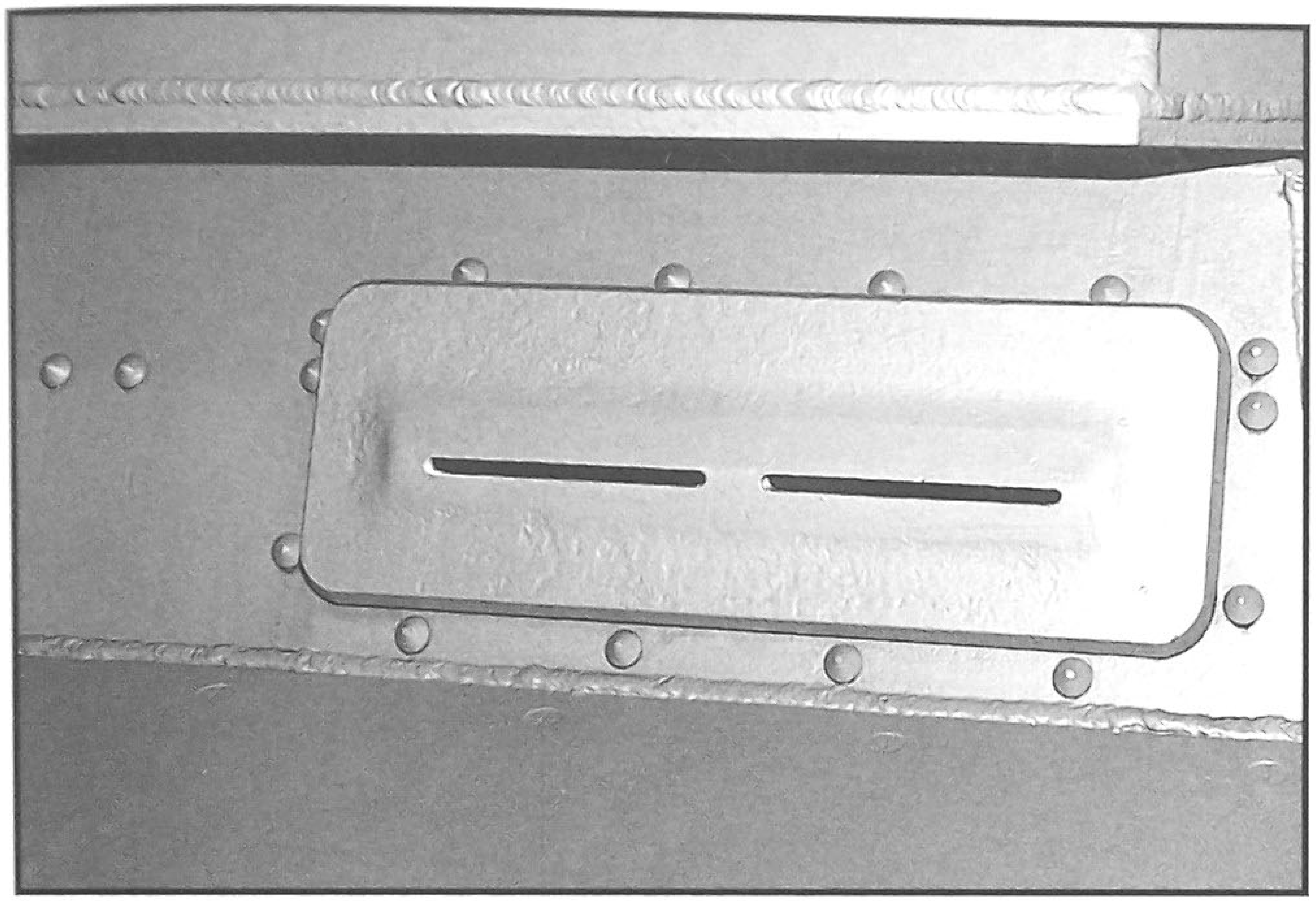


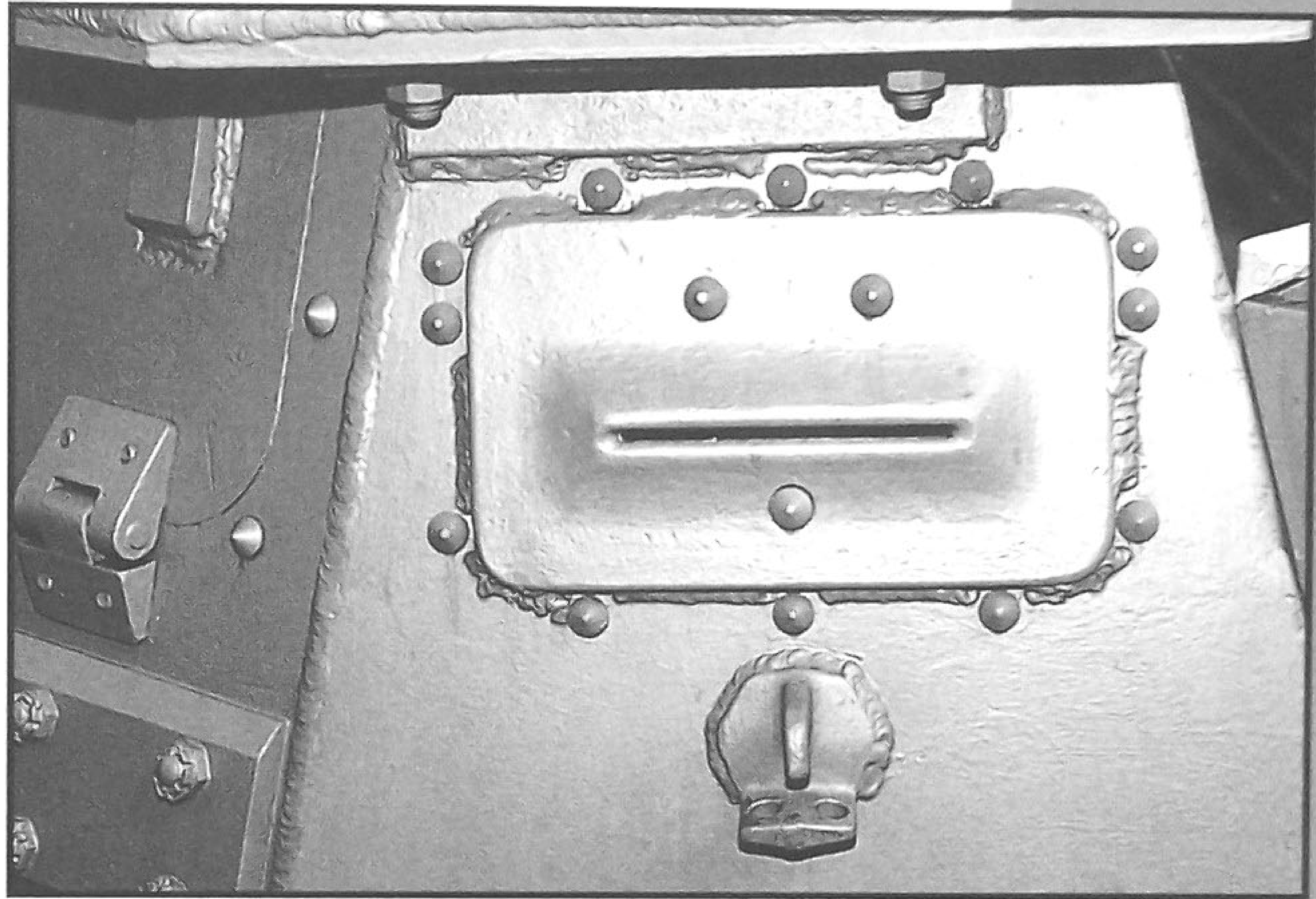


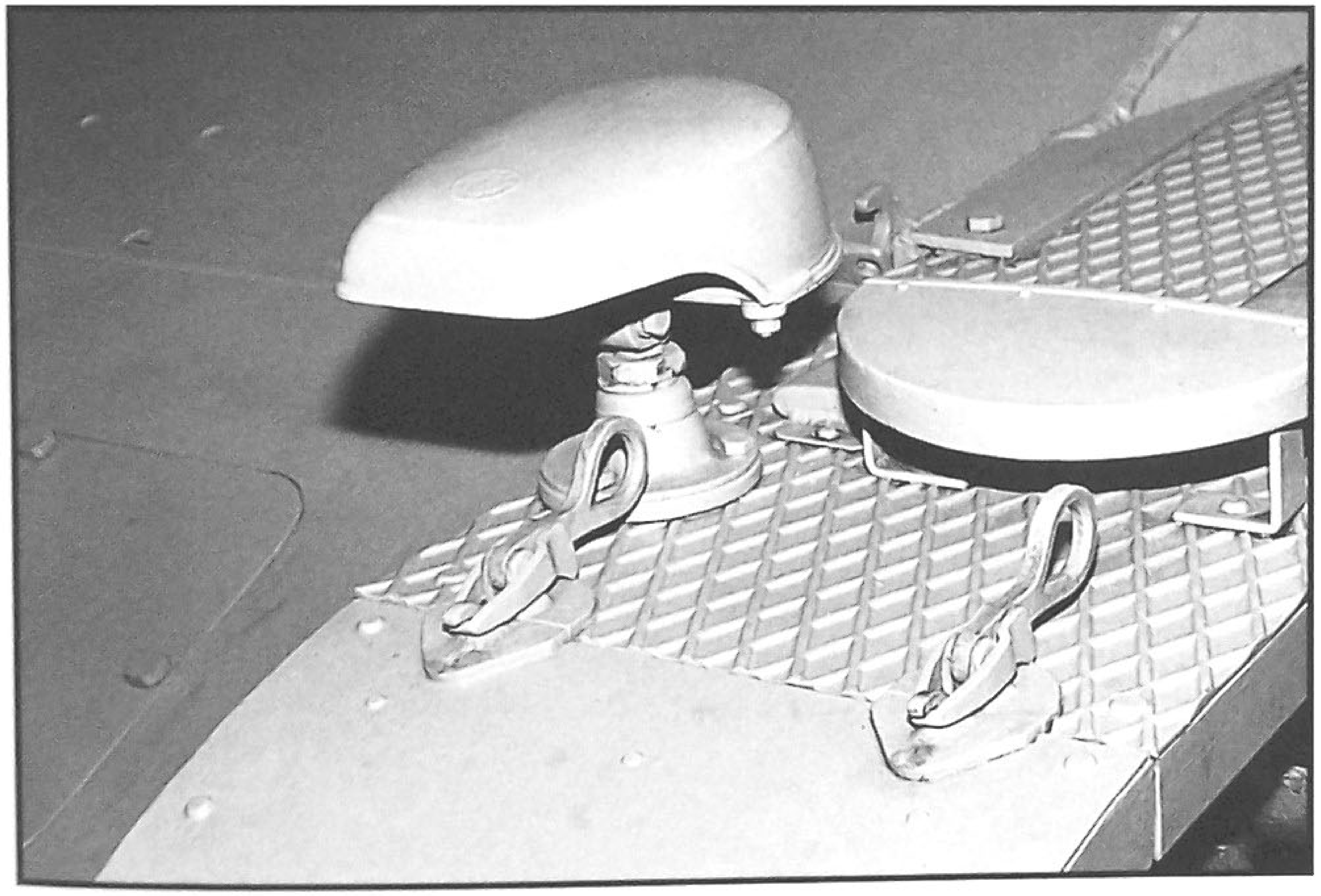
Top left: The right rear fender tool stowage. The empty bracket to the left of the wire cutter is for the jack (also see next page). **Top right:** The wrecking bar installed on the right front fender. Also note the details of the front fender clasps. **Above:** The S-shaped towing hook and the starter crank installed on the left rear fender. **Right:** The clasp and rear stop for the spade on the left front fender.

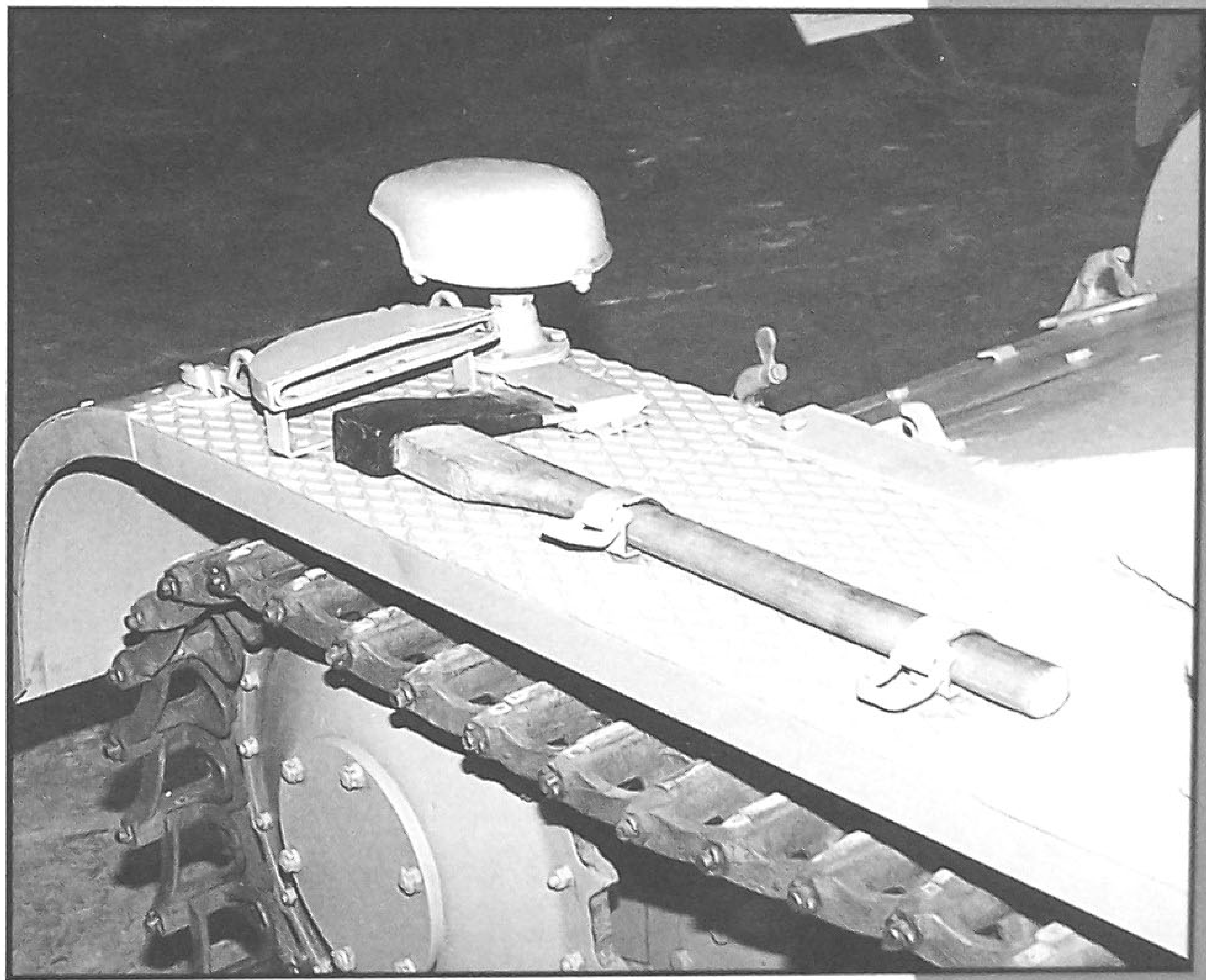





Top left: A closer view of the jack bracket on the right rear fender. **Top right:** This small, circular hatch allowed access for filling the radiator. Note the lock and its cover. **Left:** The large cooling vent located on the right rear hull. **Above right:** A close-up of one of the many lifting hooks that dotted the superstructure and hull.









Top left: The exterior of the front driver's vision port. **Top right:** One of the original vision ports on the left rear superstructure, welded shut for conversion to Panzerjäger. **Above left:** The front left mount Notek light and empty bracket for the spade. The front fender clasps can also be seen to good advantage here. **Right:** The ax installed below the spade.

SdKfz. 10 1-ton Halftrack



The SdKfz. 10 1-ton Halftrack was one of a number of specialized semi-tracked vehicles developed before and during the Second World War. Design of the SdKfz. 10 began as early as 1934, with several prototypes being tested. The vehicle utilized an unpowered front axle combined with a tracked rear drive composed of interleaving roadwheels and lubricated, padded tracks. The final production version of the vehicle was powered with a Maybach "NL 38" six-cylinder engine and was designated leichter Zugkraftwagen 1t (Sd. Kfz. 10). Initial design and production was done by Demag AG of Wetter/Ru but later Alder, Bussing-NAG, Mechanisehe Werke-Cottbus and Saurerwerke also joined production French firms, such as Lorraine, Panhard, Peugeot, Renault, and Simca, also produced parts for the vehicle. This vehicle is seen in service on the eastern front during the winter of 1943/44. If properly maintained, the automotive performance of SdKfz. 10 was considered excellent. (BA)



The SdKfz. 10 could accommodate up to eight soldiers under cover. This and its cross-county abilities made it a popular choice for HQ companies. This vehicle is seen crossing a wooden bridge in Poland on September 12th 1939. A full canvas cover is provided to protect the wind screen glass while it is in the lowered position. (BA)



This vehicle of the SS-Totenkopf Division is most likely assigned to the SS-Infantrie Division 1 in late May of 1940. The SdKfz. 10 is towing the 15cm siG 33 Infantry gun. The crew has mounted a British helmet to the front of the radiator housing. They have painted "Calais," a French coastal town on the top. An aerial recognition flag is pulled across the top of the engine compartment. (BA)



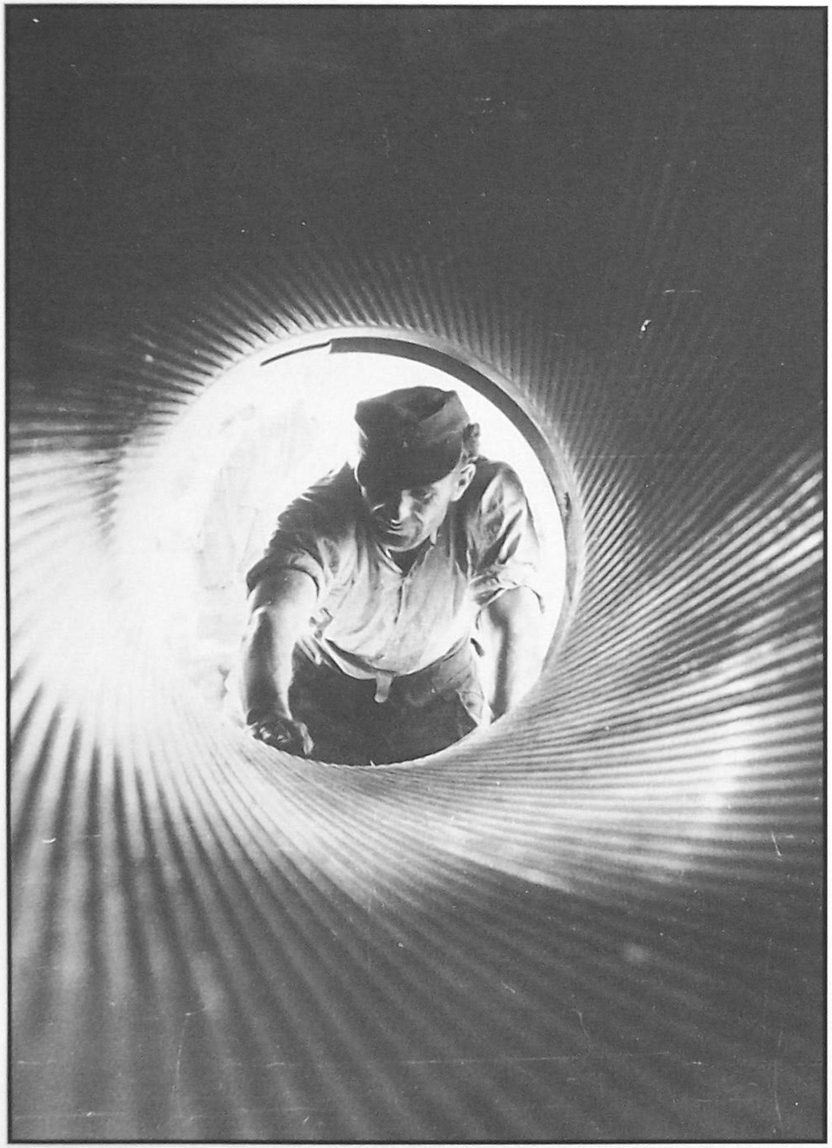
Virtually all branches of the Wehrmacht used the SdKfz. 10 and by 1942 more than 11,000 were in service. This vehicle of the 5th Leichte Division tows a 3.7cm anti-tank gun across the North African desert. (BA)



Another SdKfz. 10 of the 5th Leichte Division is seen here towing a 5cm PaK38 L60 anti-tank gun. Although the PaK 38 was not in service when the SdKfz. 10 was developed, it was the perfect towing vehicle for that weapon. (BA)



The SdKfz. 10 easily traveled the roughly tracked roads of Northern Russia. This halftrack lacks the familiar DEMAG stamping on the radiator housing, indicating it was manufactured by one of the other firms. It contains an interesting looking rack, purpose unknown, in the crew compartment. (BA)





Because of the small number of guns produced, it is possible to trace the combat action of individual guns. The following series of photos depicts Karl-Gerät Number VI "Ziu," firing on Warsaw during the late summer of 1944. Karl-Gerät Number VI was part of Heeres Artillerie Batterie (bo) 638 at that time.

Above left: Prior to firing or loading a careful inspection of the barrel rifling was conducted. Any defects in the bore could effect the round's ability to land accurately, or even fire at all. (BA) **Above right:** The immense size of the bore is illustrated clearly here. (BA)



A SdKfz. 10 of the 1st Panzer Division crosses a timber bridge near the city of Lettonie in the Ukraine during July 1941. (BA)



The earliest self-propelled mount for a flak weapon in the German army was developed on the SdKfz. 10. This was initiated during the prototype phase of the vehicle and it entered service at the same time. It was designated as the SdKfz 10/4. The gun (either the 2cm Flak 38 or the 2cm Flak 40) was located centrally on the rear superstructure and hinged, screened sides were provided. These could be folded down to provide all around transverse of the gun. The three vehicles seen here are from an unidentified Luftwaffe unit and are traveling through the city of Krakow, Poland in September of 1939. (BA)



This SdKfz. 10/4 is attached to the 24th Panzer Division and is seen during operation "Blau" in the summer of 1942. The crew is ever vigilant for targets and scans the horizon constantly. Their presence in the column would be to form a dome of flak protection, along with other tractors dispersed throughout the line of vehicles. Note the empty headlight housing on the right fender. (BA)



One of the primary advantages of the SdKfz. 10/4 was the ability to quickly remove and replace the weapon. This allowed the gun to be used on its towed mount or installed in a fixed emplacement. The SdKfz. 10/4 generally towed a small ammunition trailer, but vehicles such as this could be used to transport ammunition in larger quantities. (BA)



One of the many manufacturers of the SdKfz. 10 was Bussing-NAG and they were also responsible for the construction of an armored version of the SdKfz. 10/4. It became known as the SdKfz. 10/5 and it utilized a series of 8mm plates to protect the cab and engine compartment. Combined with the armored shield of the flak weapon, this provided some measure of protection for the crew. This crew has amassed a significant number of kills, as indicated by the hash marks on the gun shield. Note that this vehicle tows a single axle trailer. (BA)



Another view of the same Luftwaffe SdKfz. 10/5. The rifle racks, which were normally installed in the rear crew compartment, were relocated to the front fenders on both the SdKfz. 10/4 and 5. Like the main weapon, the rifles are also prudently secured with all-weather covers. (BA)



One of the most unusual uses of the SdKfz. 10 was as a platform for mounting the 5cm PaK38 L60 anti-tank gun. The gun was placed on a steel crossbeam that was laid across the rear crew compartment. The gun was used complete, minus its wheels and trails. Armored plate was added to the radiator housing and the windshield in a manner similar to the SdKfz. 10/5. This was a unit made conversion of the SdKfz. 10 and not a true variant. It appears to have been limited to use within Waffen SS units. It is interesting to note that in this photo and others the entire soft-top has been retained to give both the gun and the crew some protection from the elements. (BA)



Due to the high manufacturing standards maintained by the various companies that built the SdKfz. 10, many are still running today. This vehicle and the one depicted in the following pages are two such examples. They both were photographed while on public display at the IMVPS War & Peace Show in the summer of 2000. This example has a centrally mounted MG34 and is missing the front headlight blackout covers.



This SdKfz. 10 is a near perfect restoration and it is a credit to the dedication and enthusiasm of its owner. This photo gives a good idea of the general layout of the vehicle. It is from the later portion of production, as evidenced by the design of the heat dissipation vent near the exhaust (also see page 44).

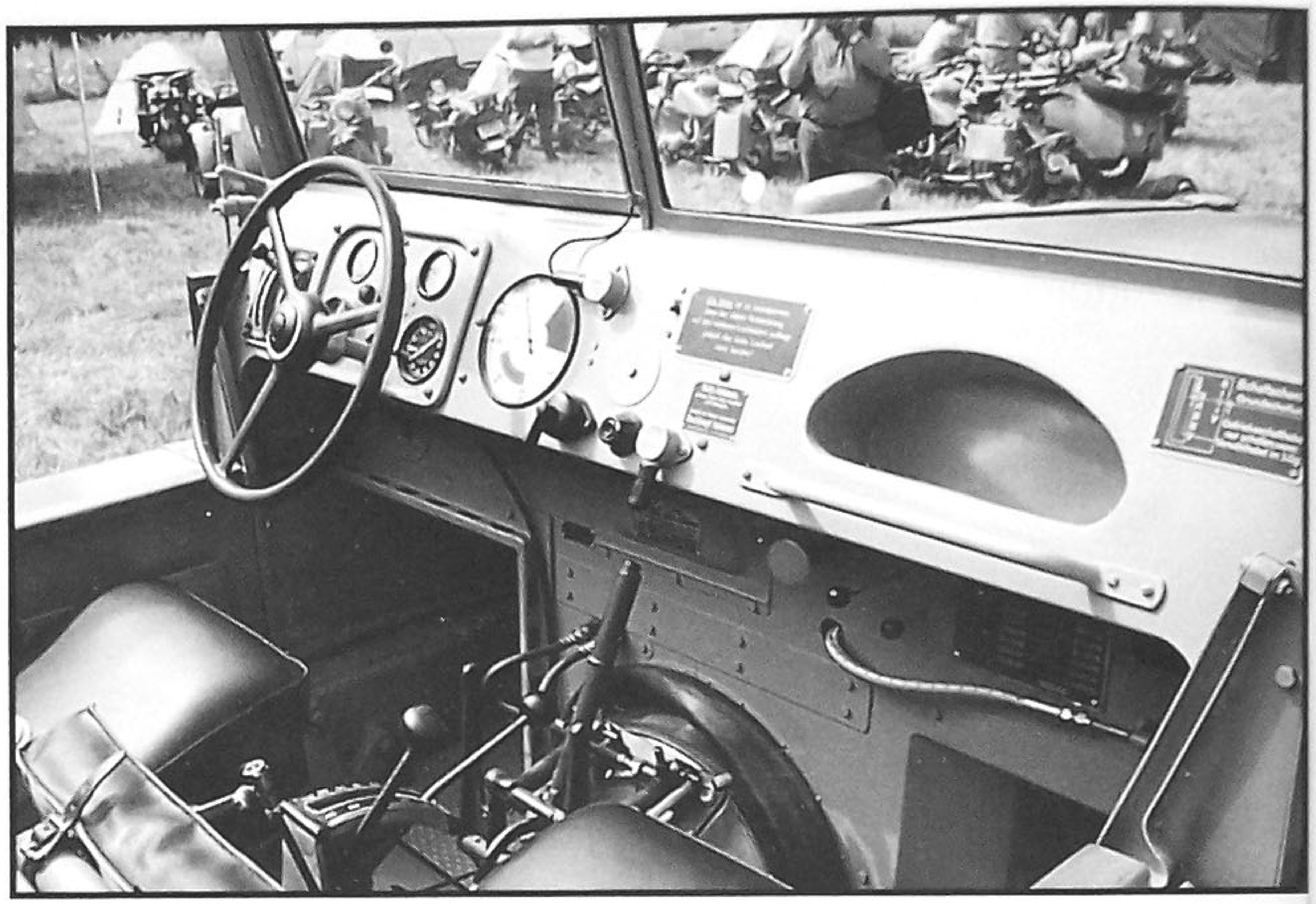


A view of the same vehicle front the rear. The SdKfz. 10 was not much bigger than a large automobile.

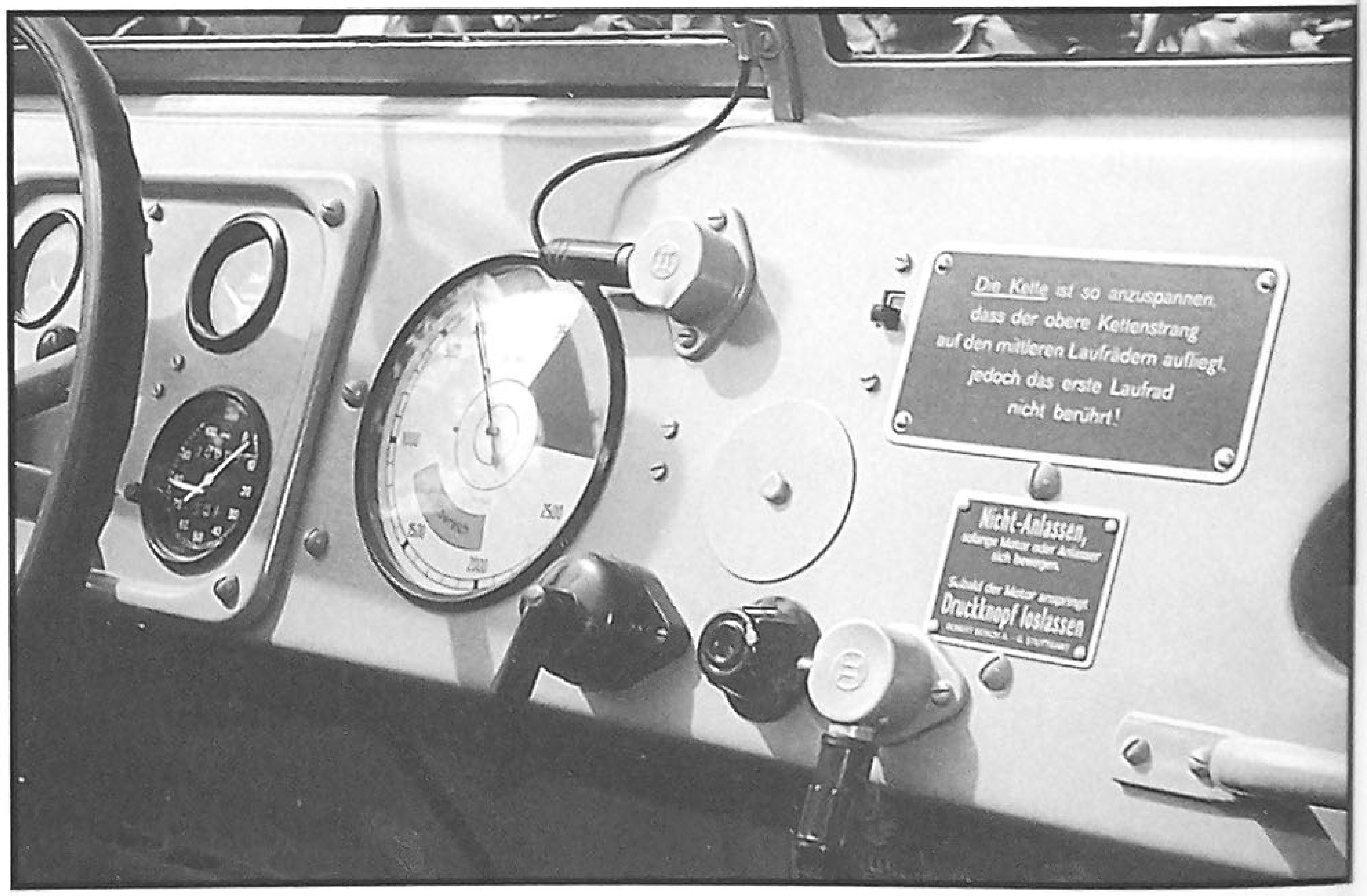


A specially modified Panzer IV chassis accompanied each gun. Three different versions of the Panzer IV were utilized for this conversion, Ausf. D, E and F. The "Munitionsschlepper für Karl-Gerät" could carry four rounds of the Karl-Gerät's 2.5 meter ammunition. A Demag electrically driven "Wippkran" was mounted to lift the shells and casings to the Karl-Gerät. The crane was powered by the same engine that was normally used to assist in the power traverse of the Panzer IV gun tank. Judging by the early style idler, this may be the only Munitionsschlepper based on the chassis of the Ausf. E. Details of the crane base and superstructure are in evidence. (BA)

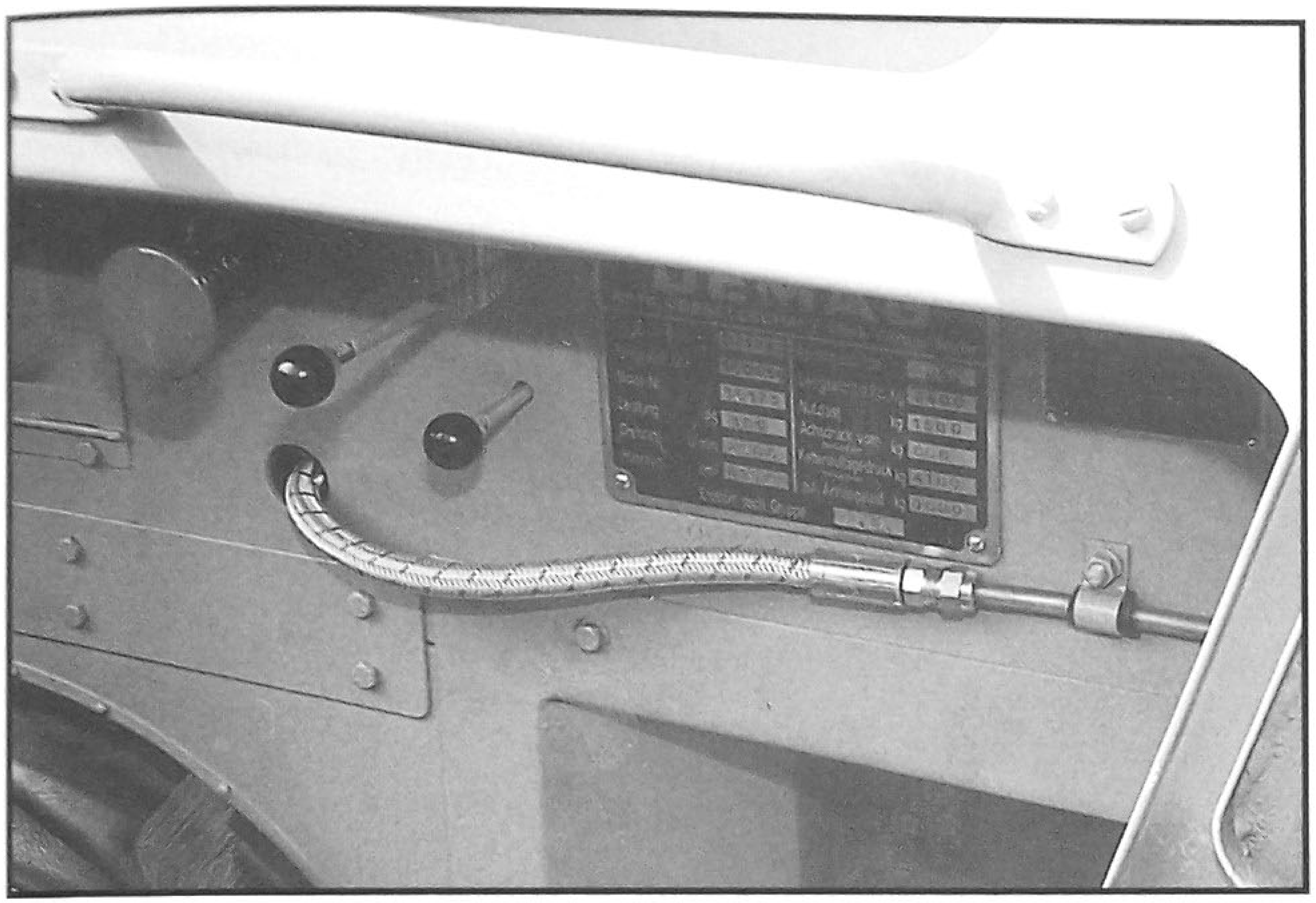






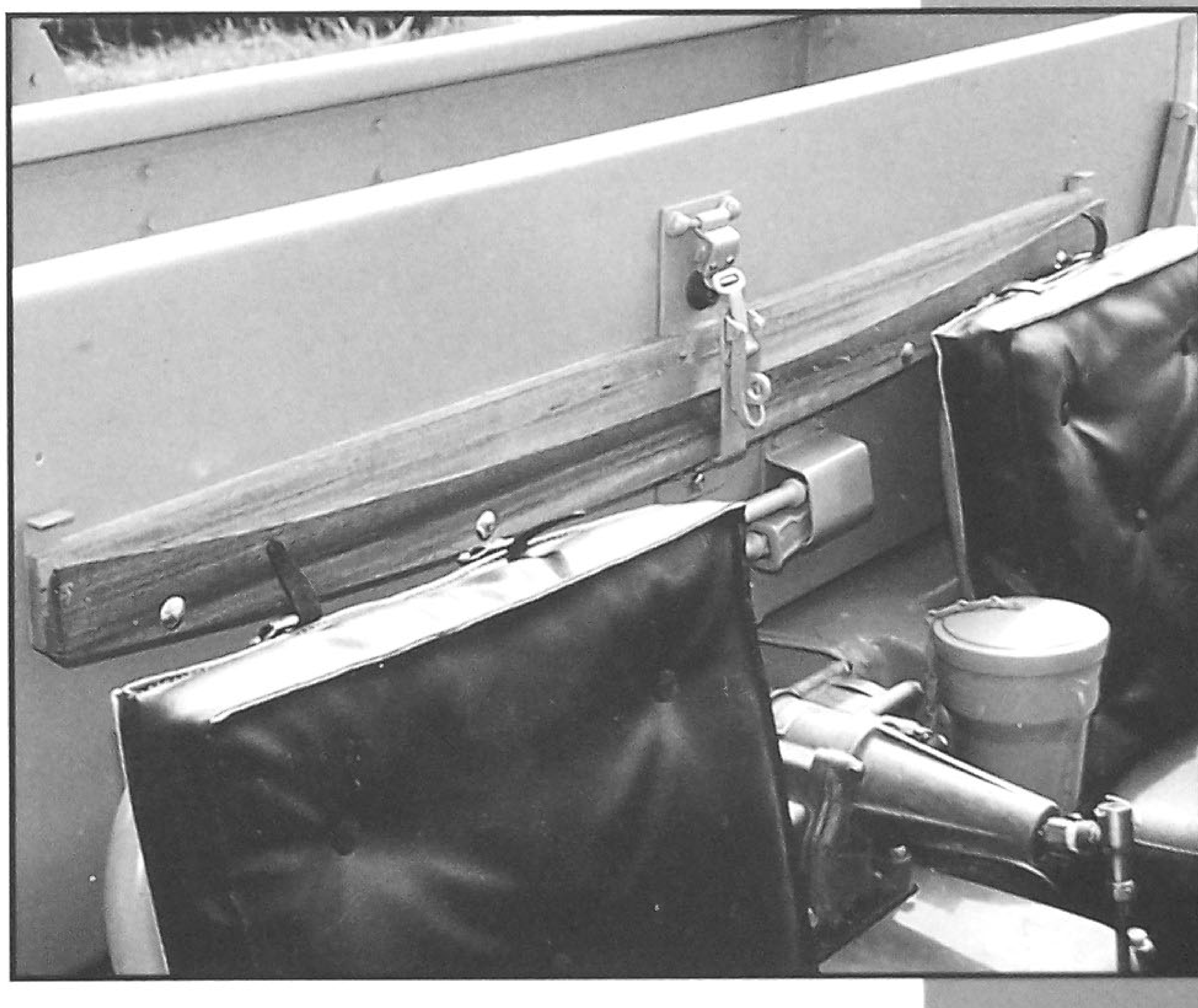


Top left and right: Two views of the front crew compartment showing the overall layout of the dashboard. **Left:** A close-up of the steering wheel and instrument panel. **Above:** A close-up of the central portion of the dashboard. The central placard reads "The track is not to be engaged while the top run is on the roadwheels, only the first roadwheel can be affected." The smaller placard reads "Do not start as long as the engine or starter is moving" and "As soon as engine starts, release starter button."

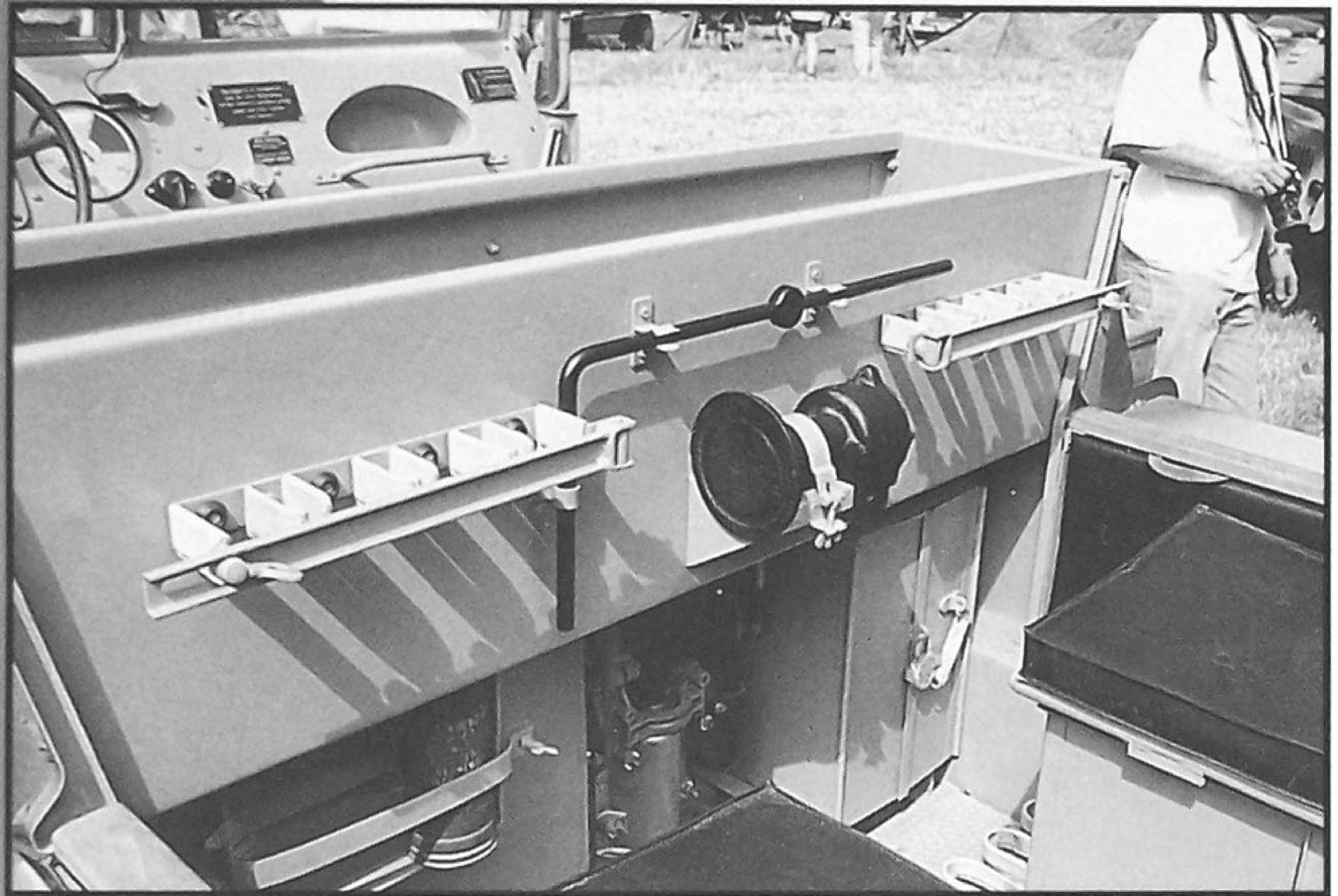


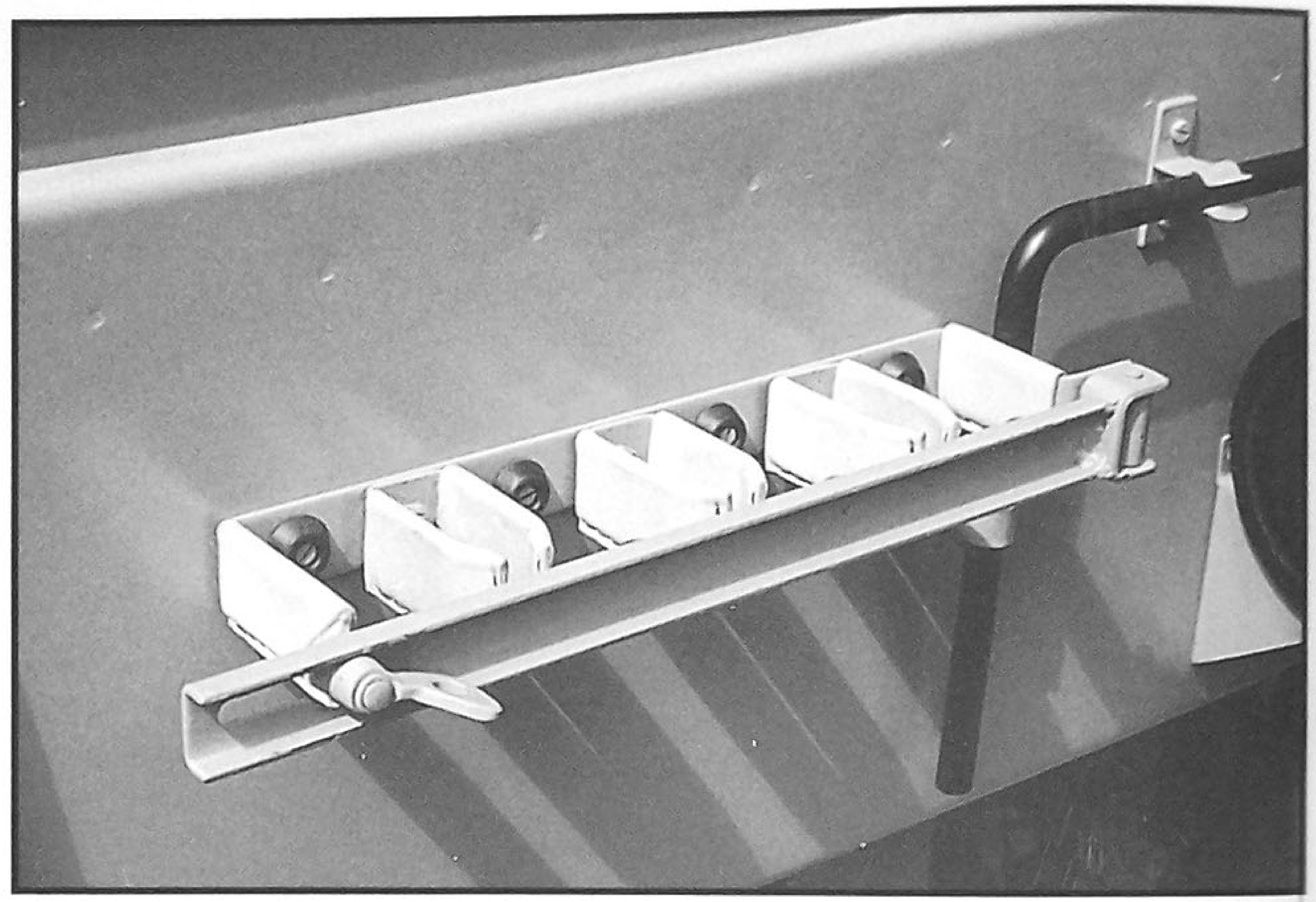


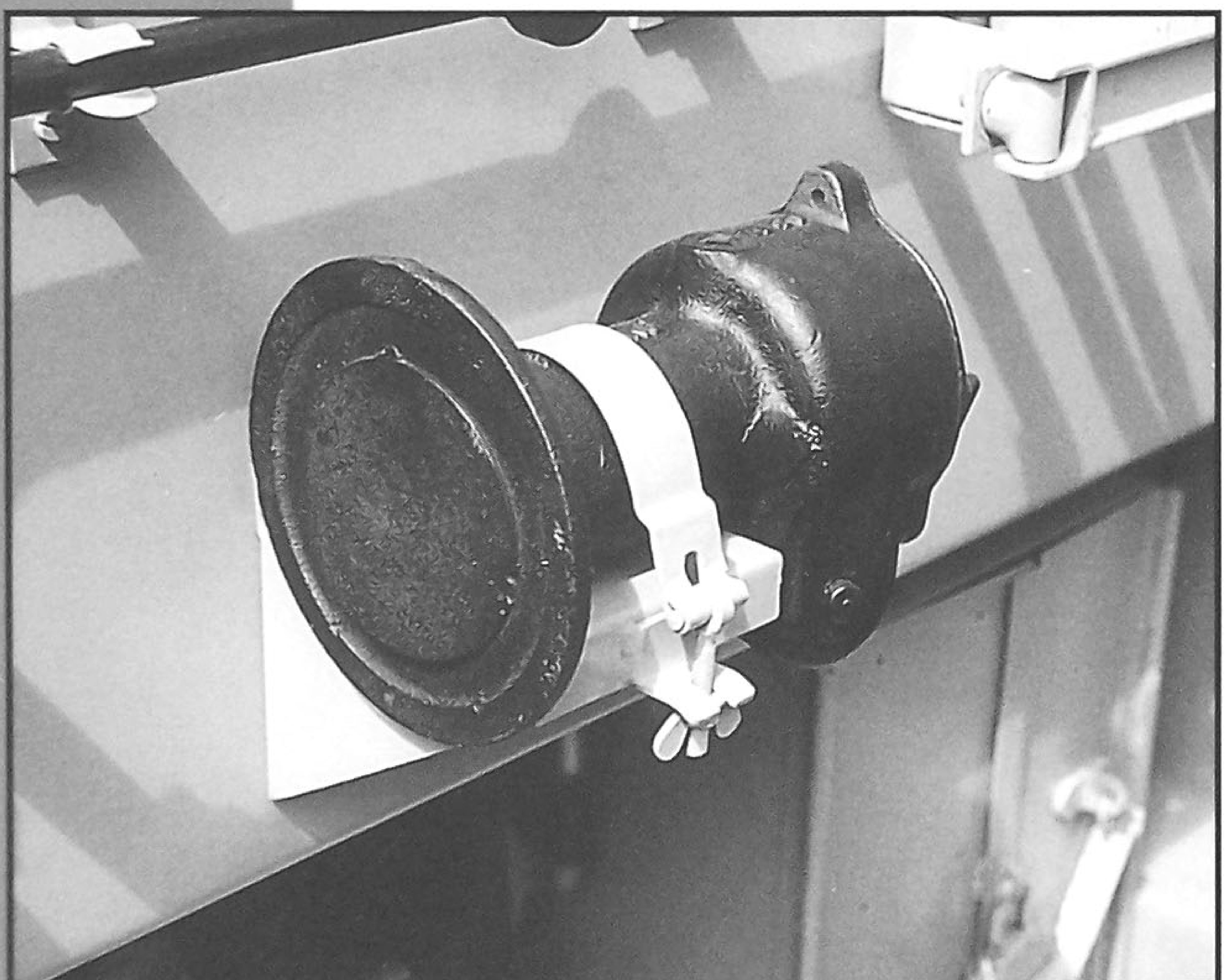


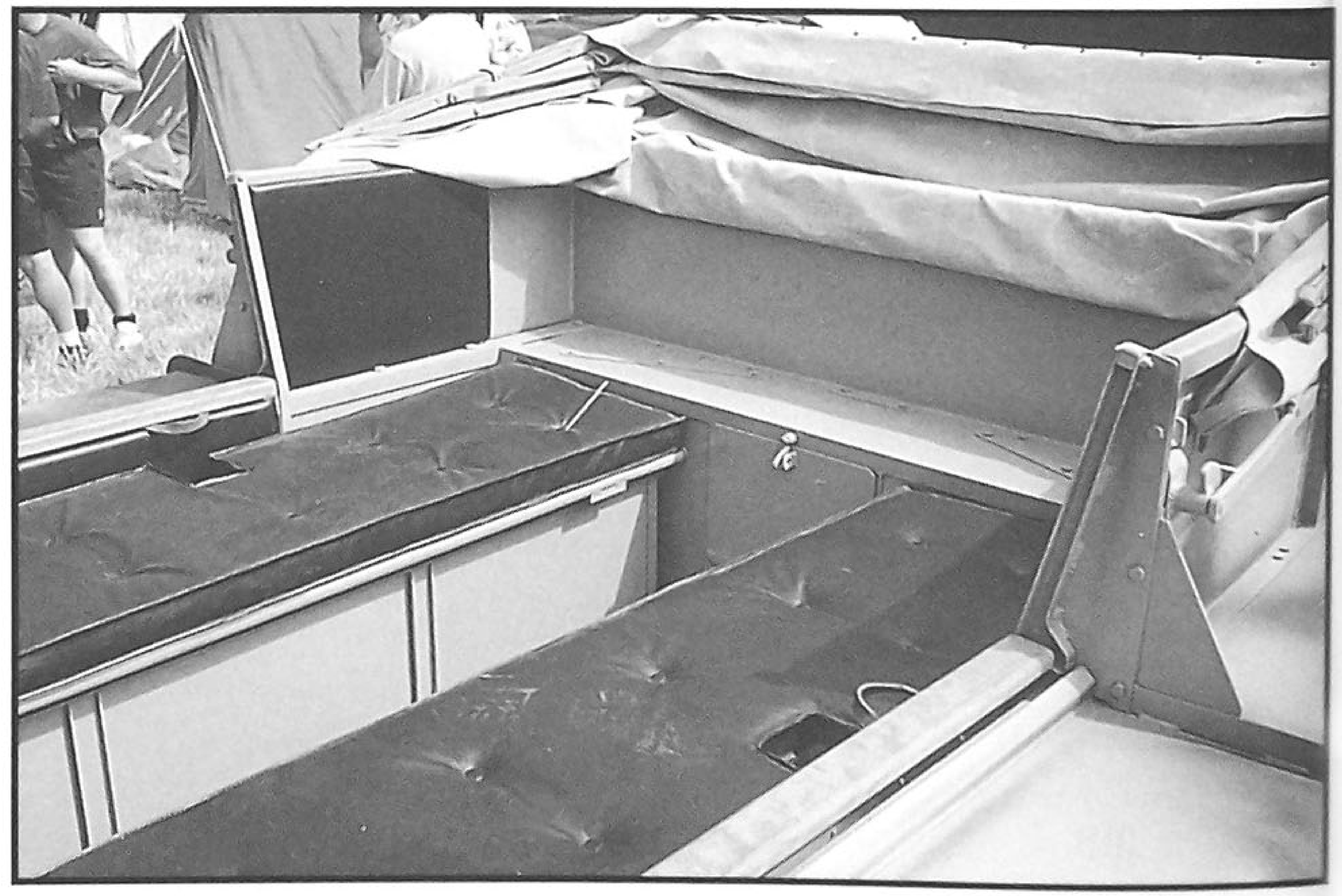


Top left: The manufacturer's placard, in this case, DEMAG and the cable for the right side turn signal. **Top right:** The semiautomatic Variorex transmission. Interestingly, the entire unit is exposed, as it was in all production vehicles. **Above:** A driver's eye view of the Variorex transmission. Note the various engagement levers and the flexible rubber seal at the firewall. **Right:** A wooden support for the soft-top was stowed behind the front seats.

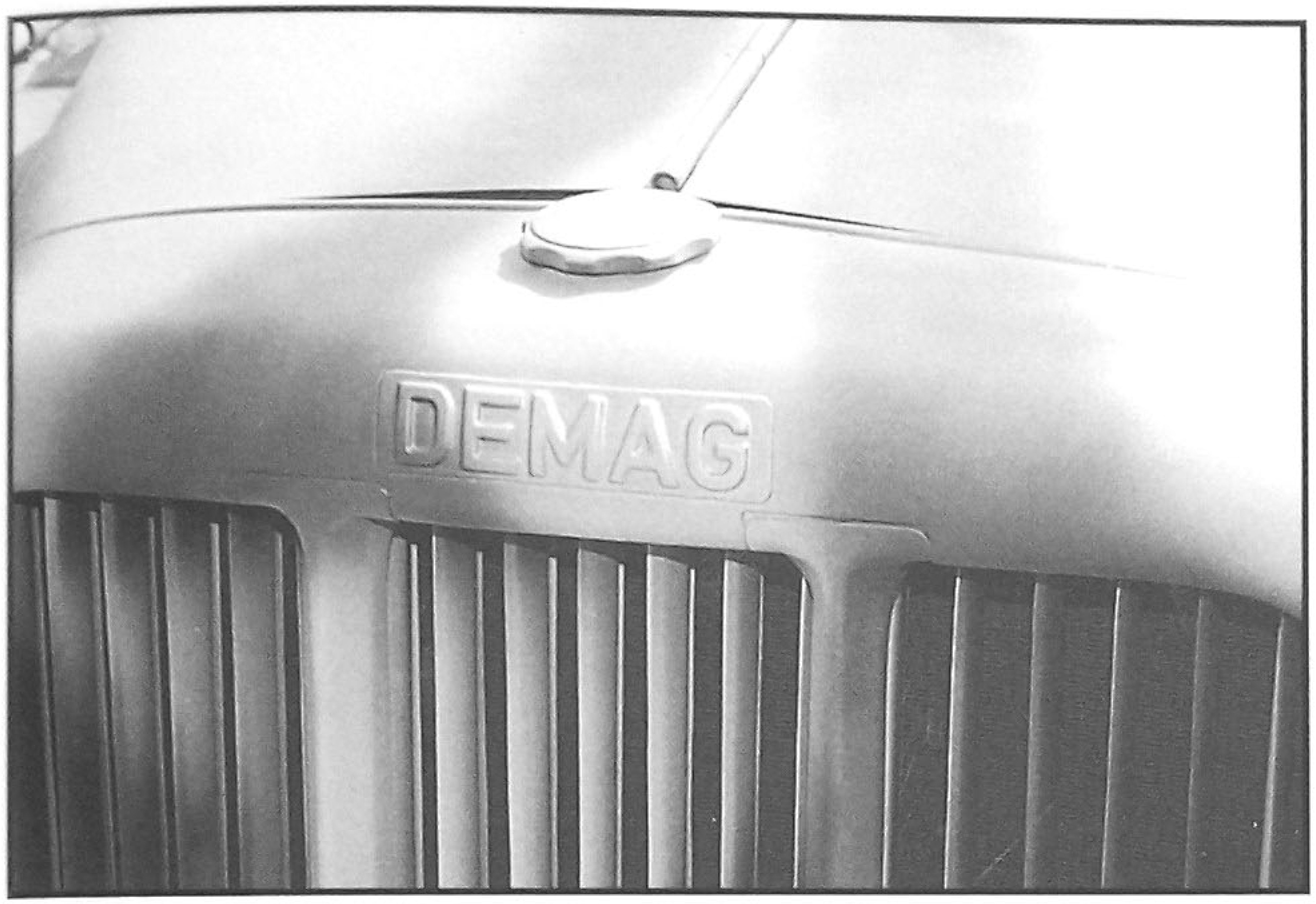




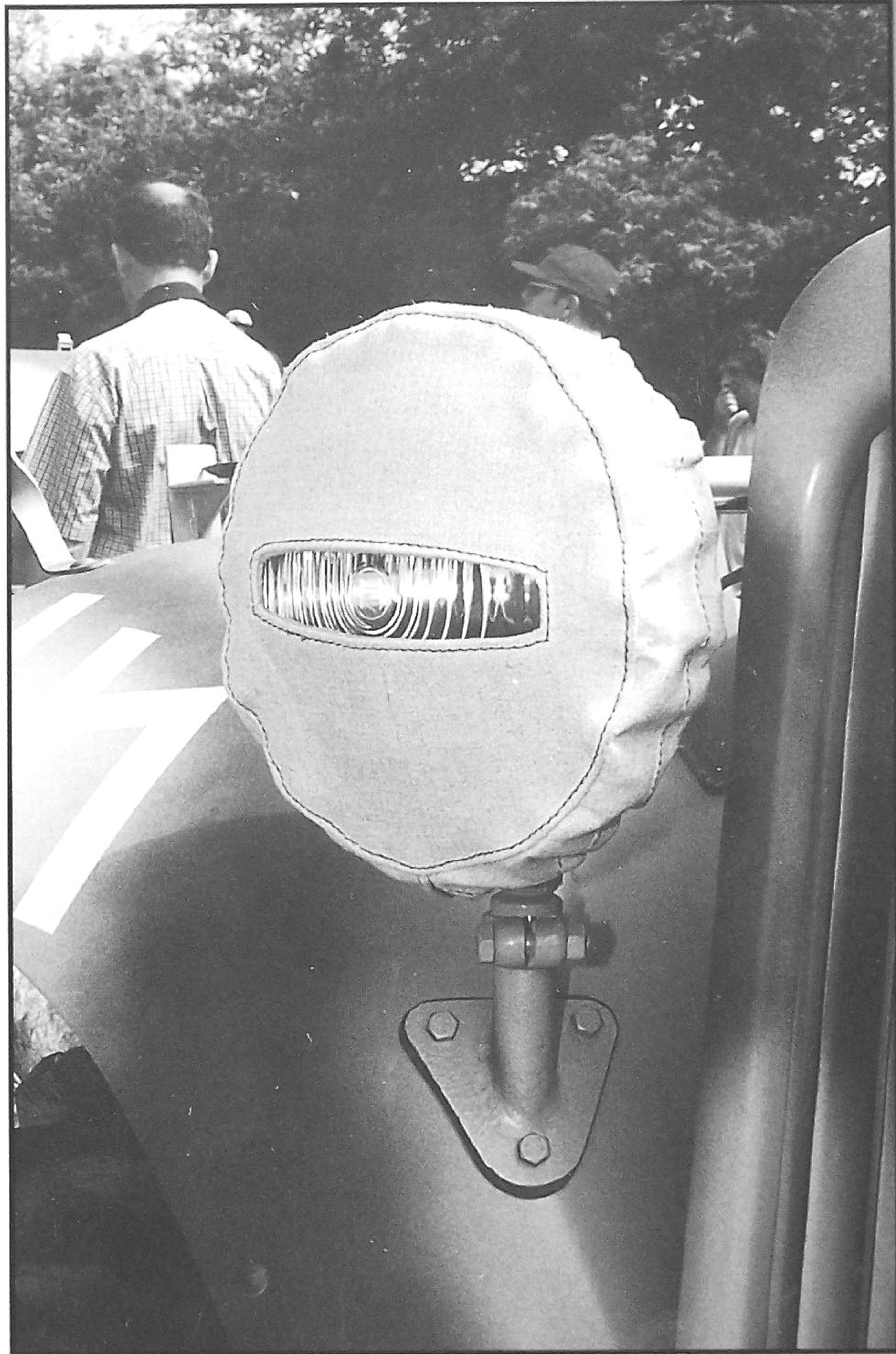




Top left: The cockpit and the crew area were divide by a large stowage box and this shows the layout of the items attached to the back. The racks on either side for securing rifles (note the butt-rack on the floor of the vehicle) and the object in the center is the jack and its handle. **Top right:** A close-up view of the left-hand rack. **Left:** A close-up of the jack and its mount. **Above:** The crew area was fairly spacious and could easily accommodate six individuals and their personal gear.

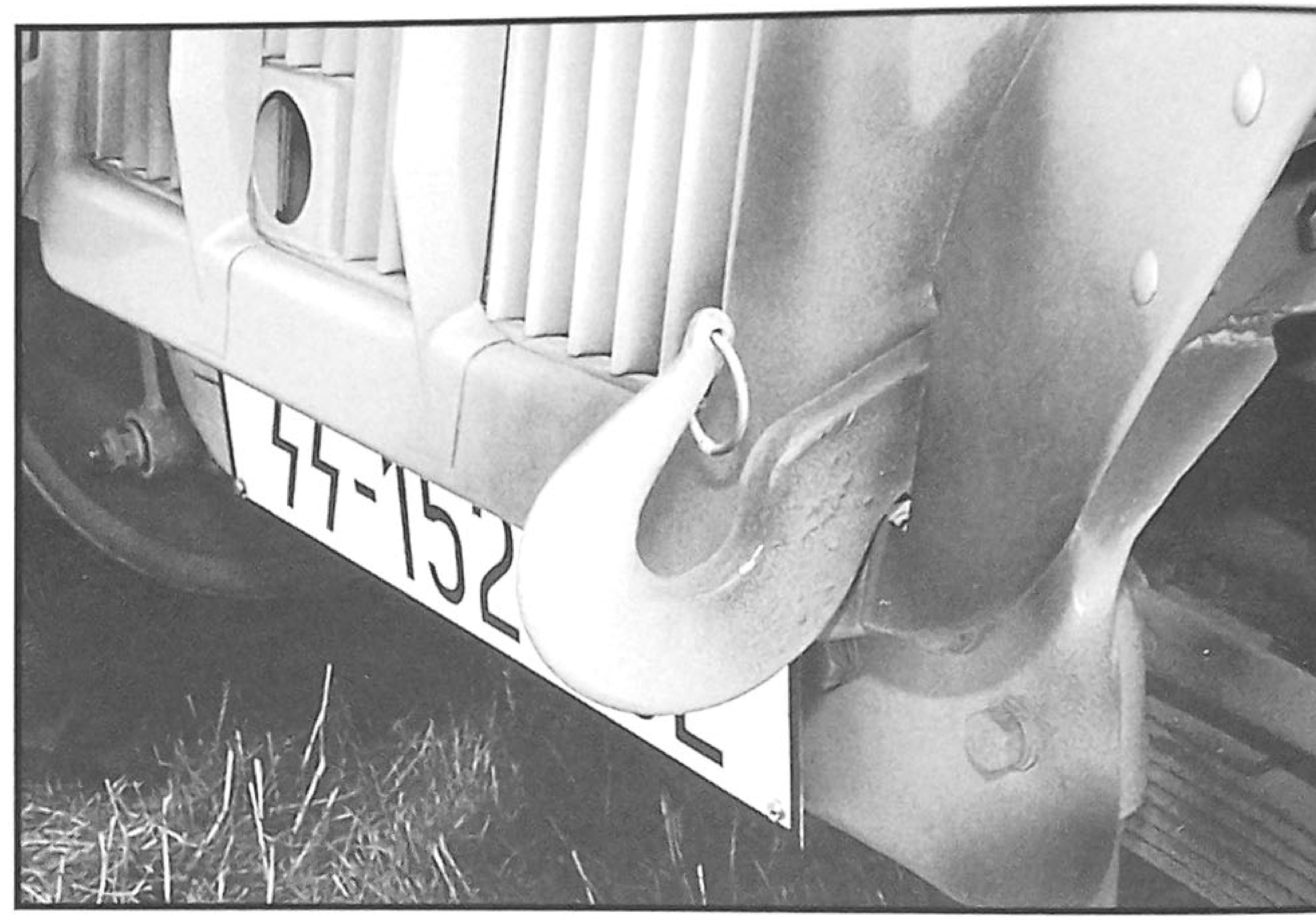


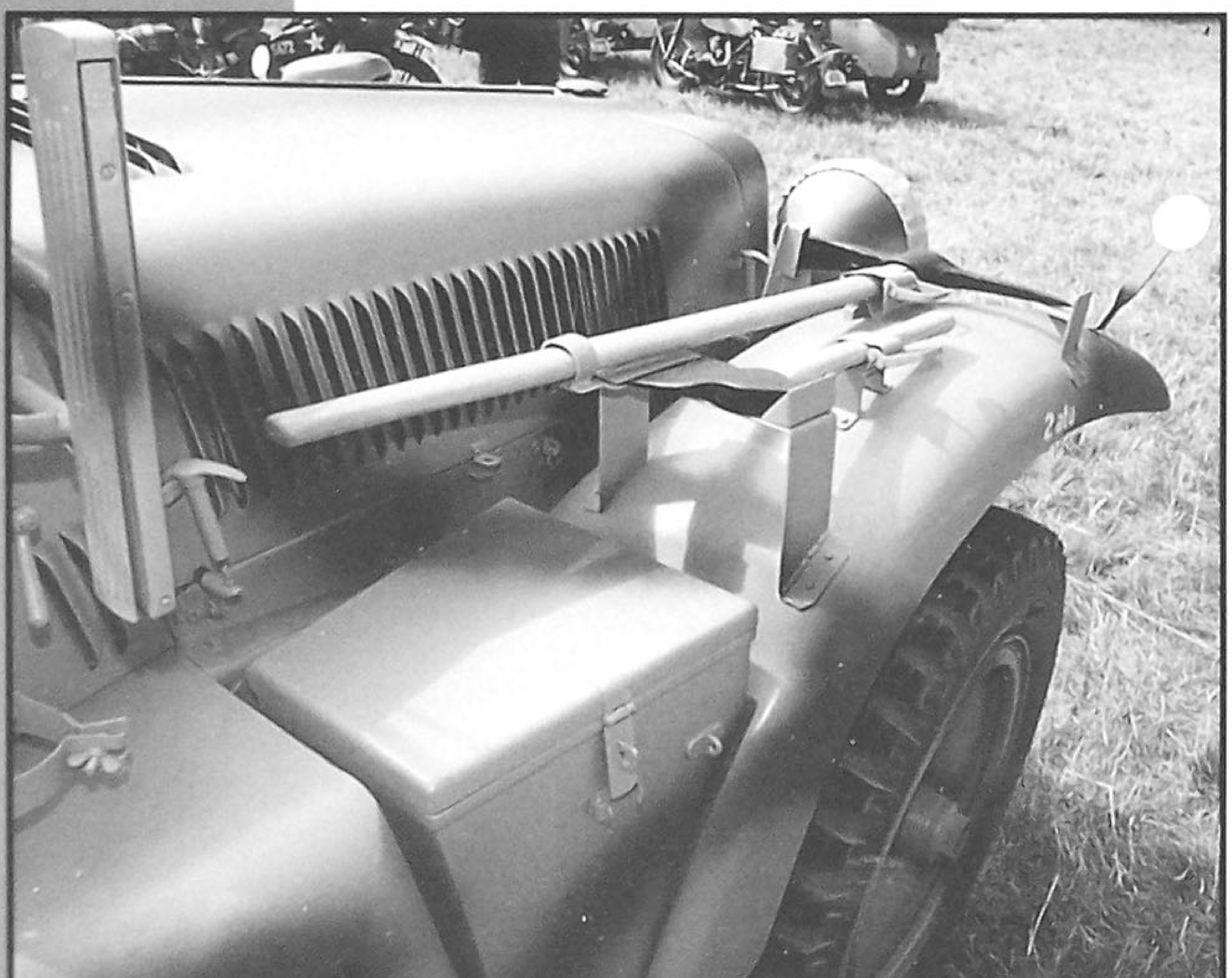


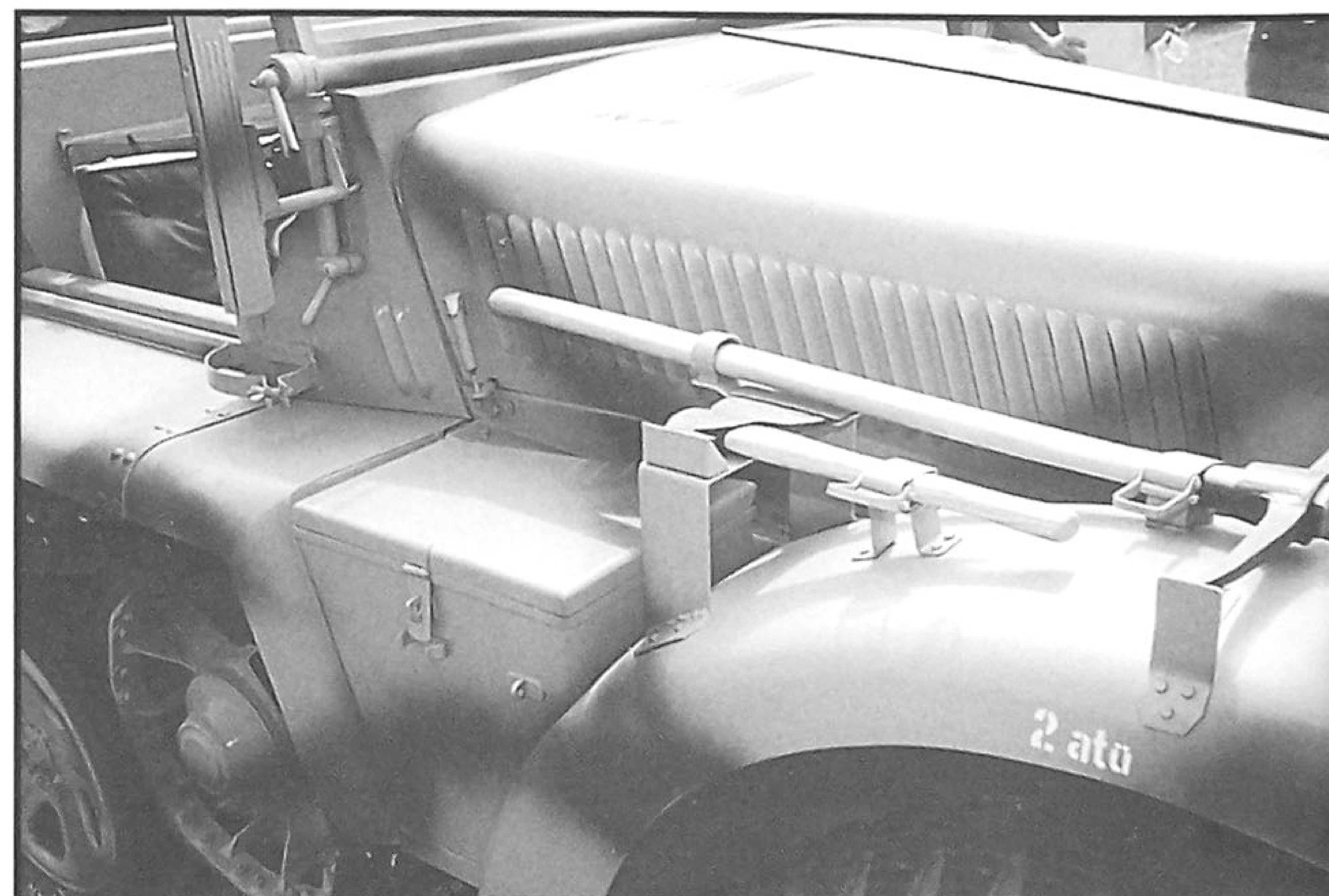


Top left: The DEMAG stamp on the radiator housing. Note the shape of the cap. **Right:** A close-up of the front right headlight. Note the design of the canvas cover and the amount of glass that shows though the cover. **Above:** An overall view of the front of the vehicle.



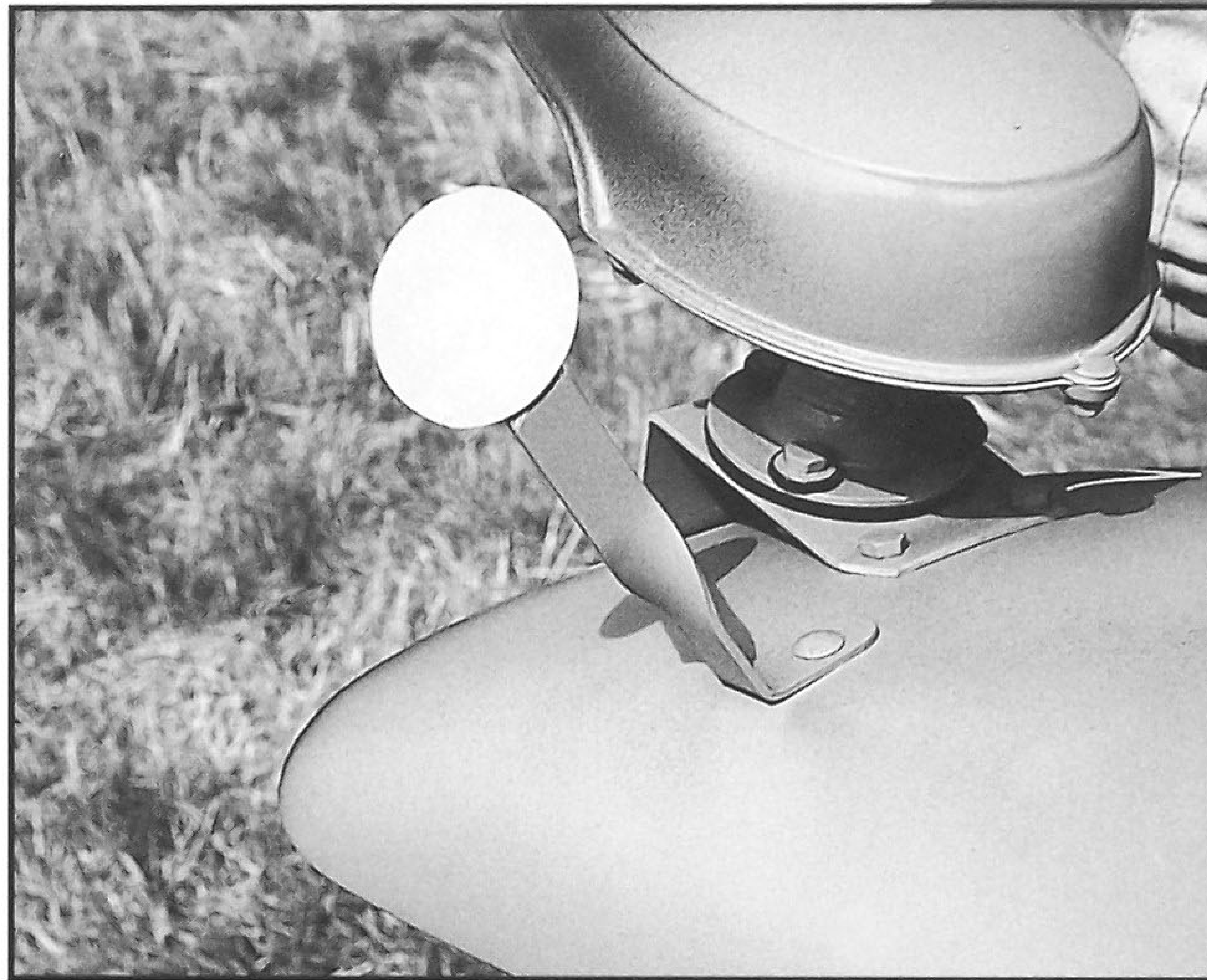


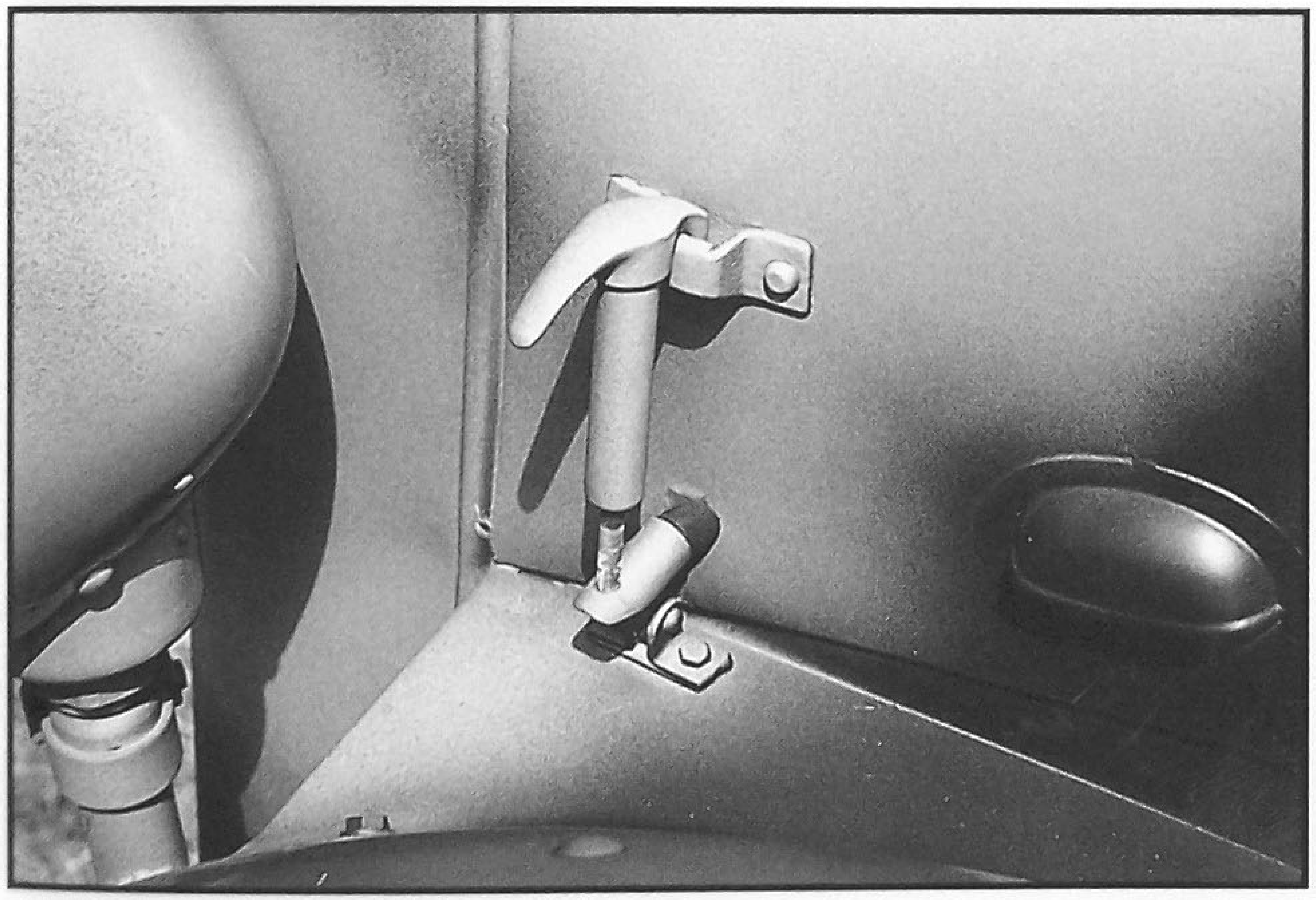


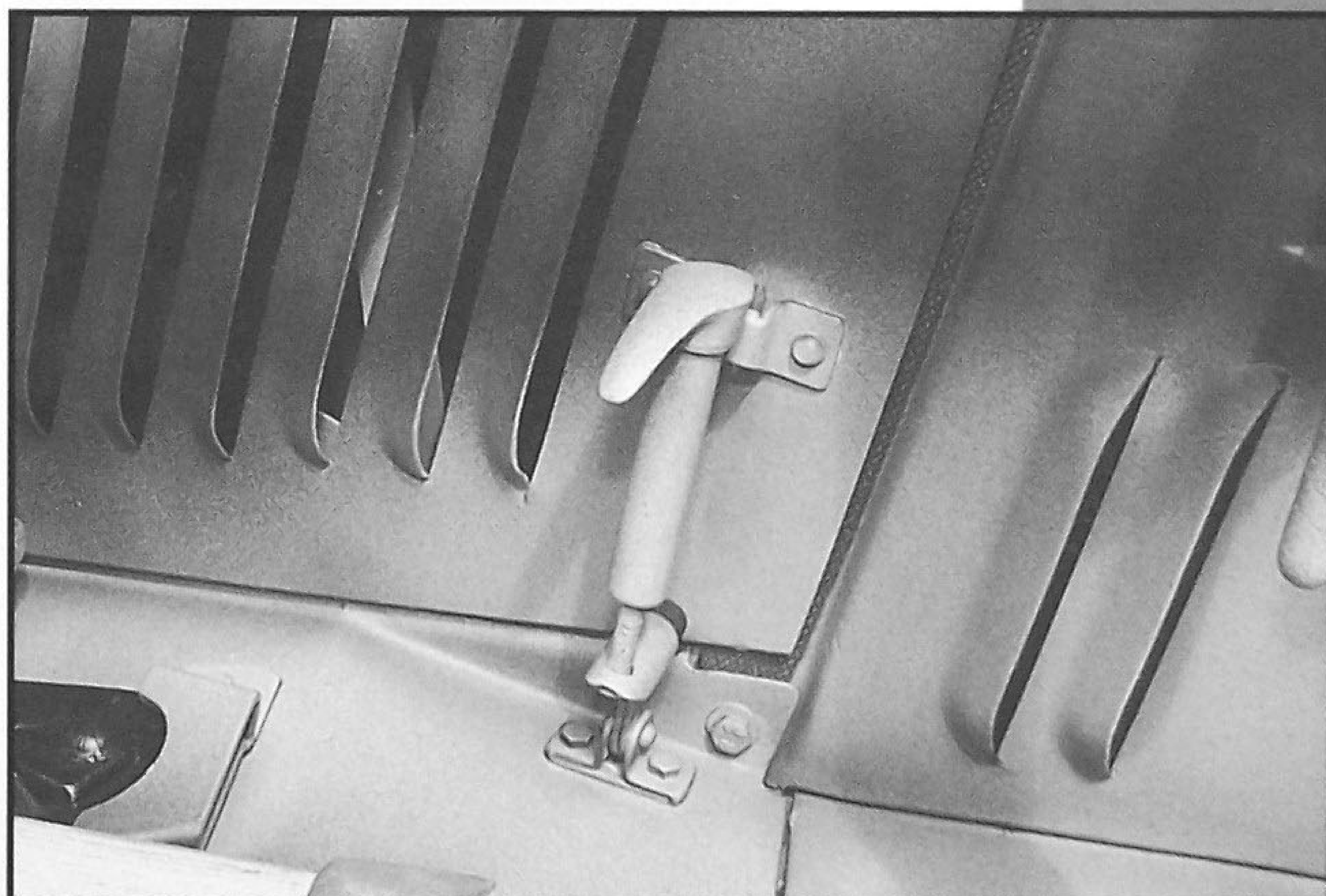


Top left: The right hand turn signal. A lever next to the steering wheel actuated it. The signal itself is actually a brightly colored wooden band housed inside. **Top right:** The front left tow hook. The small ring was used to secure tow cable to keep it from popping off when slack. **Left:** The tool suite (pick and ax) and stowage box on the right front fender. **Above:** A view from the front. Note the tire pressure marking on the fender.

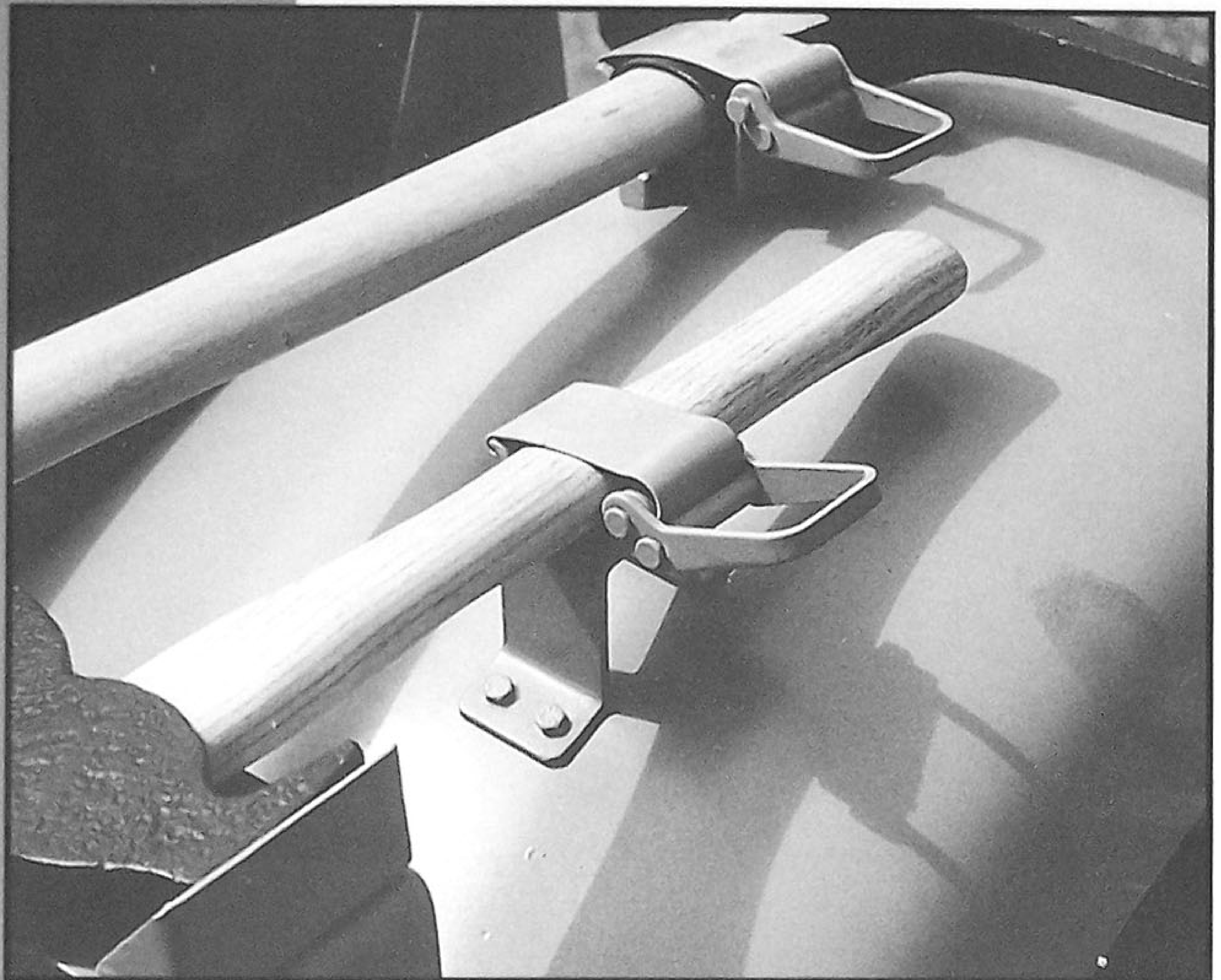


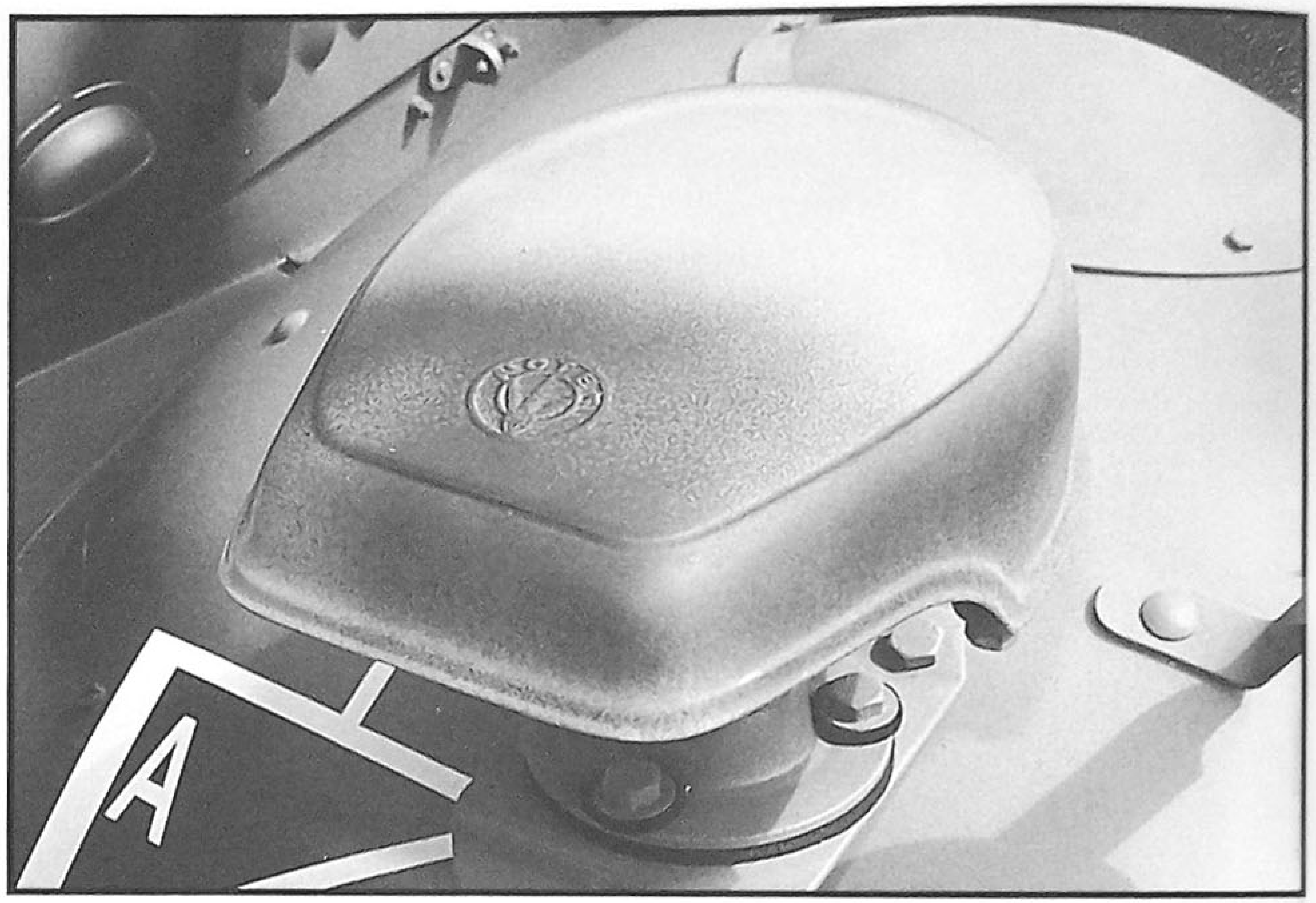




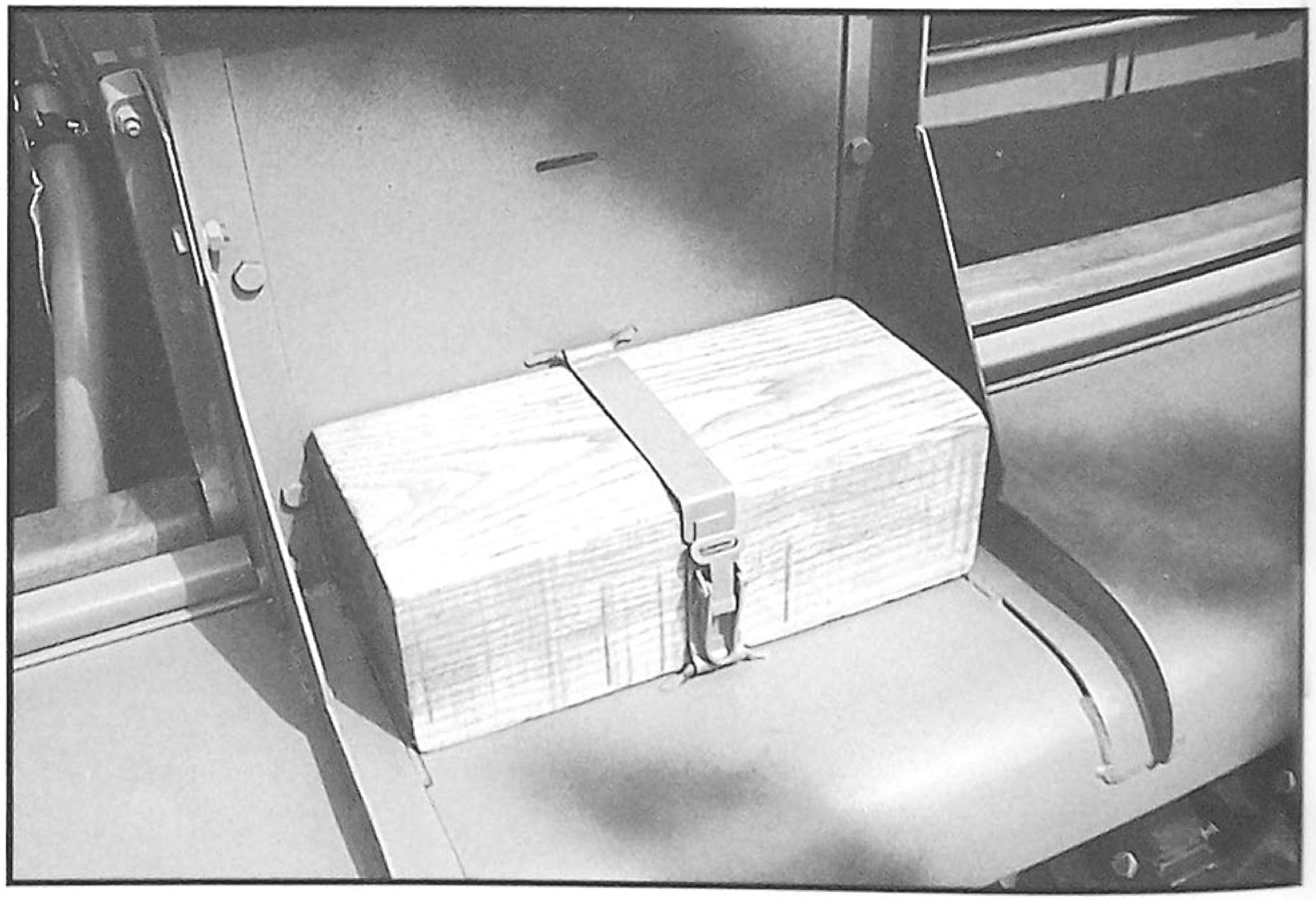


Top left: The spade and wire cutter stowed on the front left fender. **Top right:** Sheet metal distance markers were found on the front of both fenders. **Above and right:** Separate views of the spring clamps securing the engine cover, front on the left, rear on the right. A total of four were used. Both shots also illustrate the precisely stamped venting seen on the SdKfz. 10.









Top left: Details of the clamps securing the pick and ax. **Top right:** The Notek light mount on the front left fender. Note the Notek stamp on the top. **Left:** The first aid box mounted on the right side fender above the tracks. **Above:** The large wooden jack block on the left side fender above the tracks.

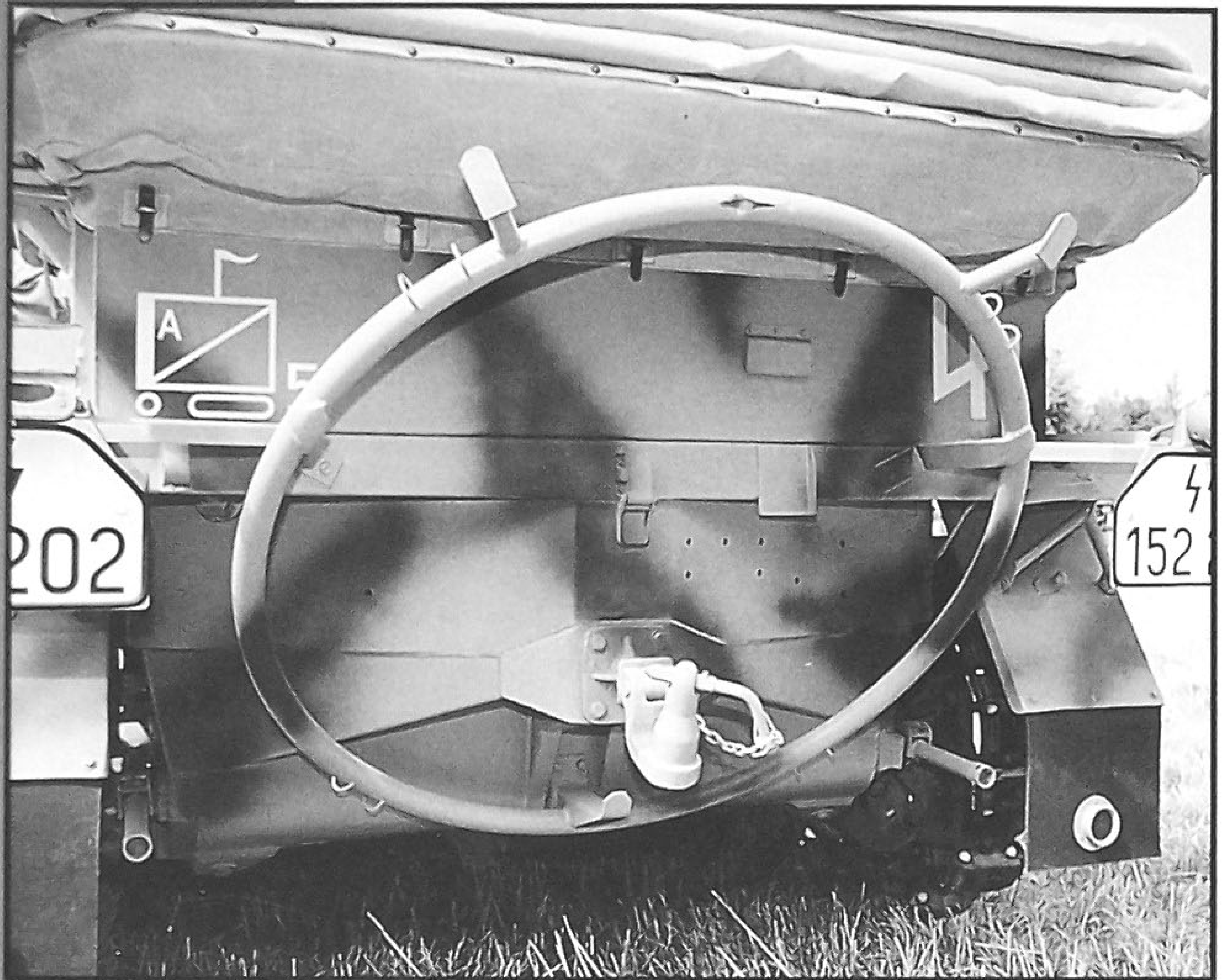


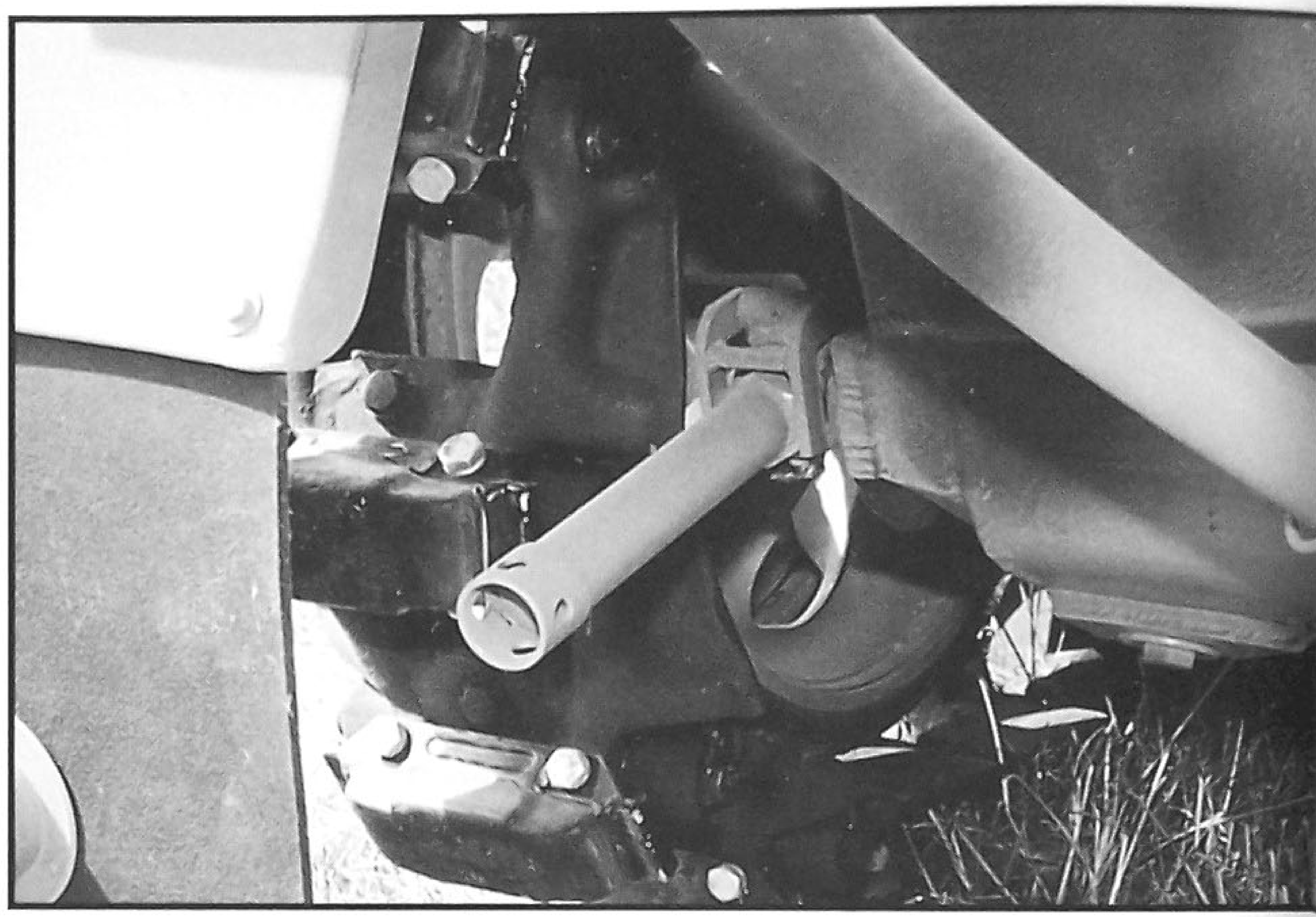


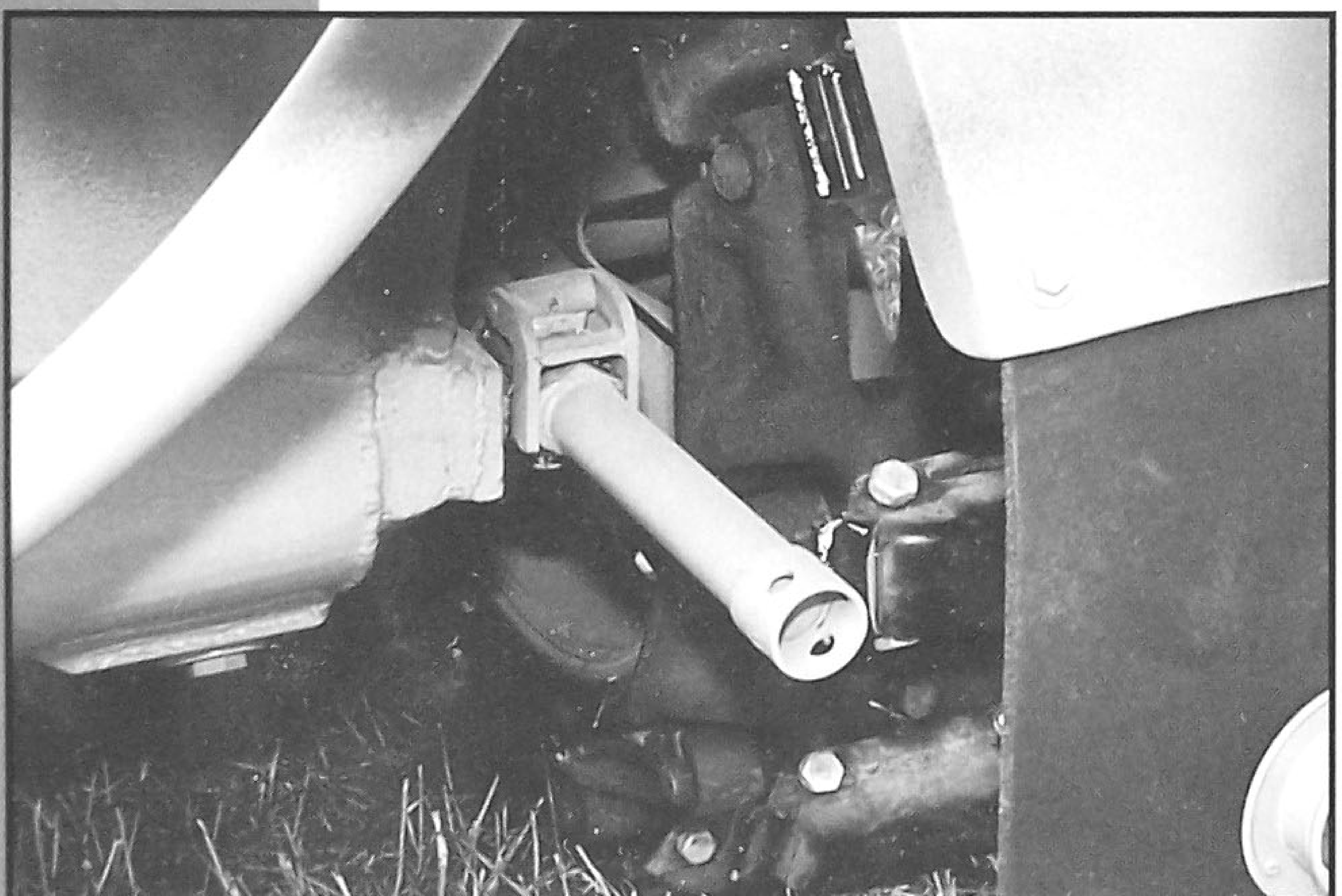


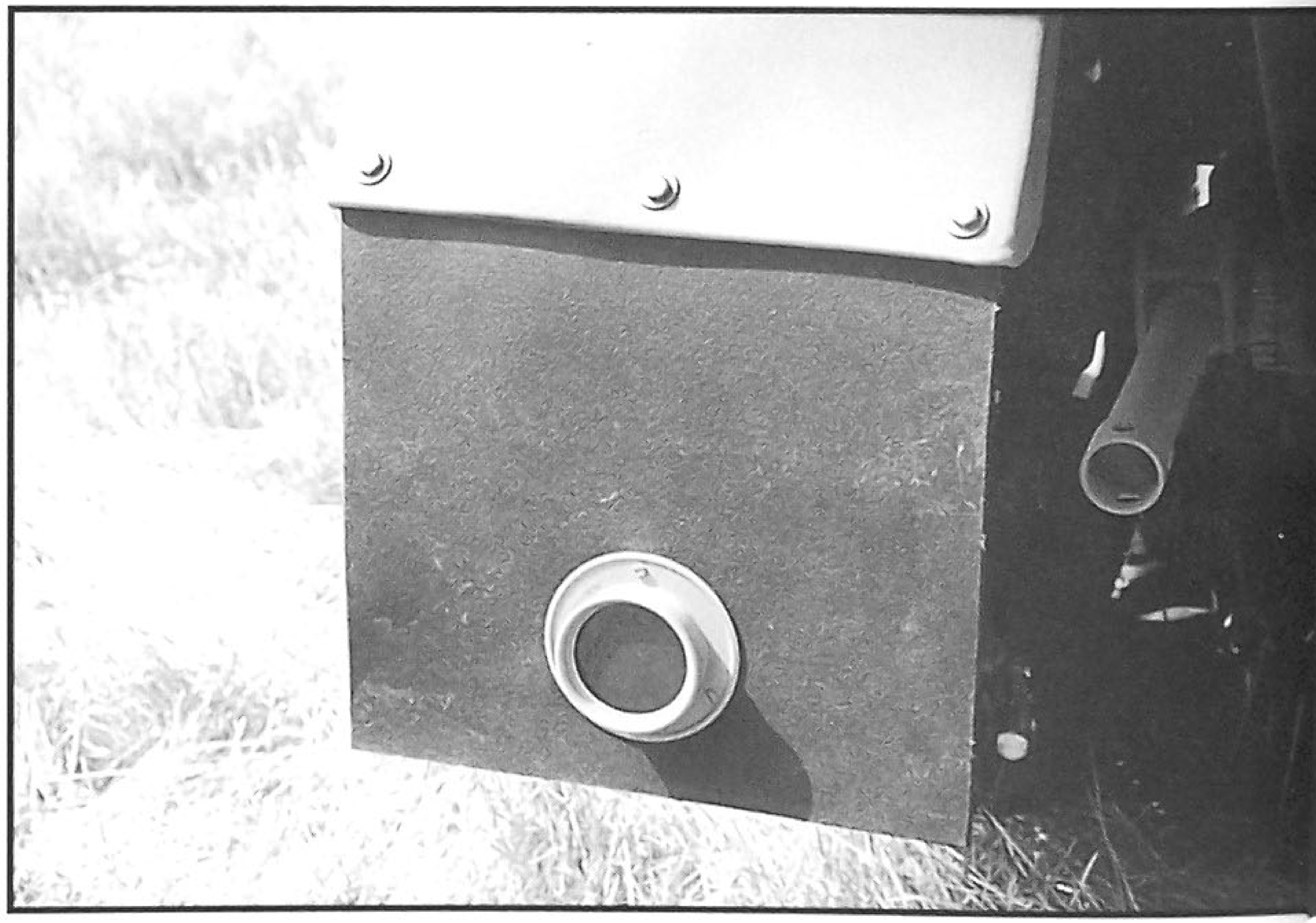


Top left: The complex system of wooden stays for the canvas top. **Above:** Front and rear views of the rear blackout driving light **Right:** A good close-up of the clasp used to secure the soft-top stays.





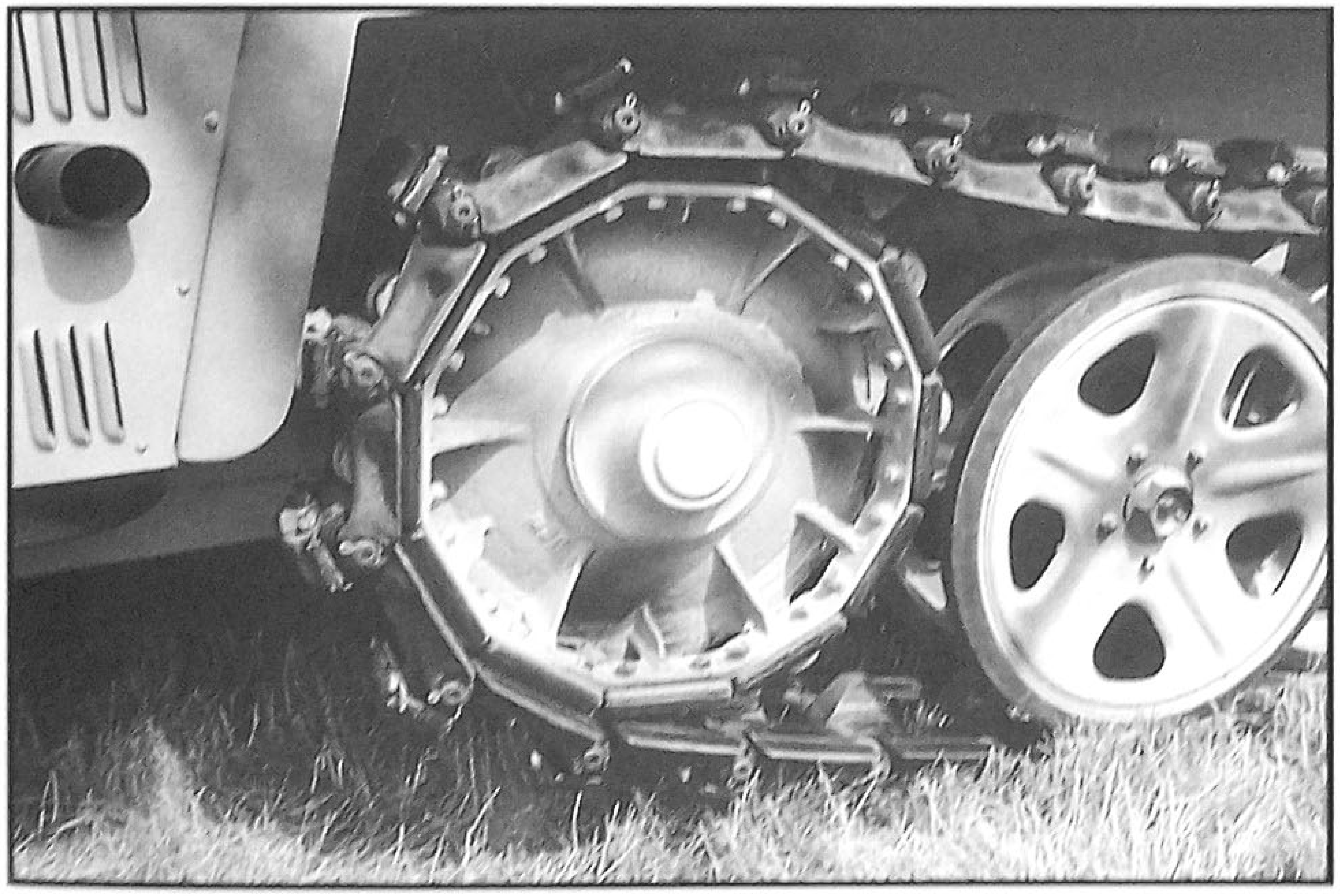




Top left: This rack was used to stow a tow cable or rope. It was sometimes modified in the field to mount a spare fro tire. **Top right and left:** The left and right rear track adjusters. A special tool could be inserted in the opening around t edge to turn the adjuster, which would either tighten or loosen the tracks by moving the rear idler. **Above:** The left rea mud flap and its reflector.

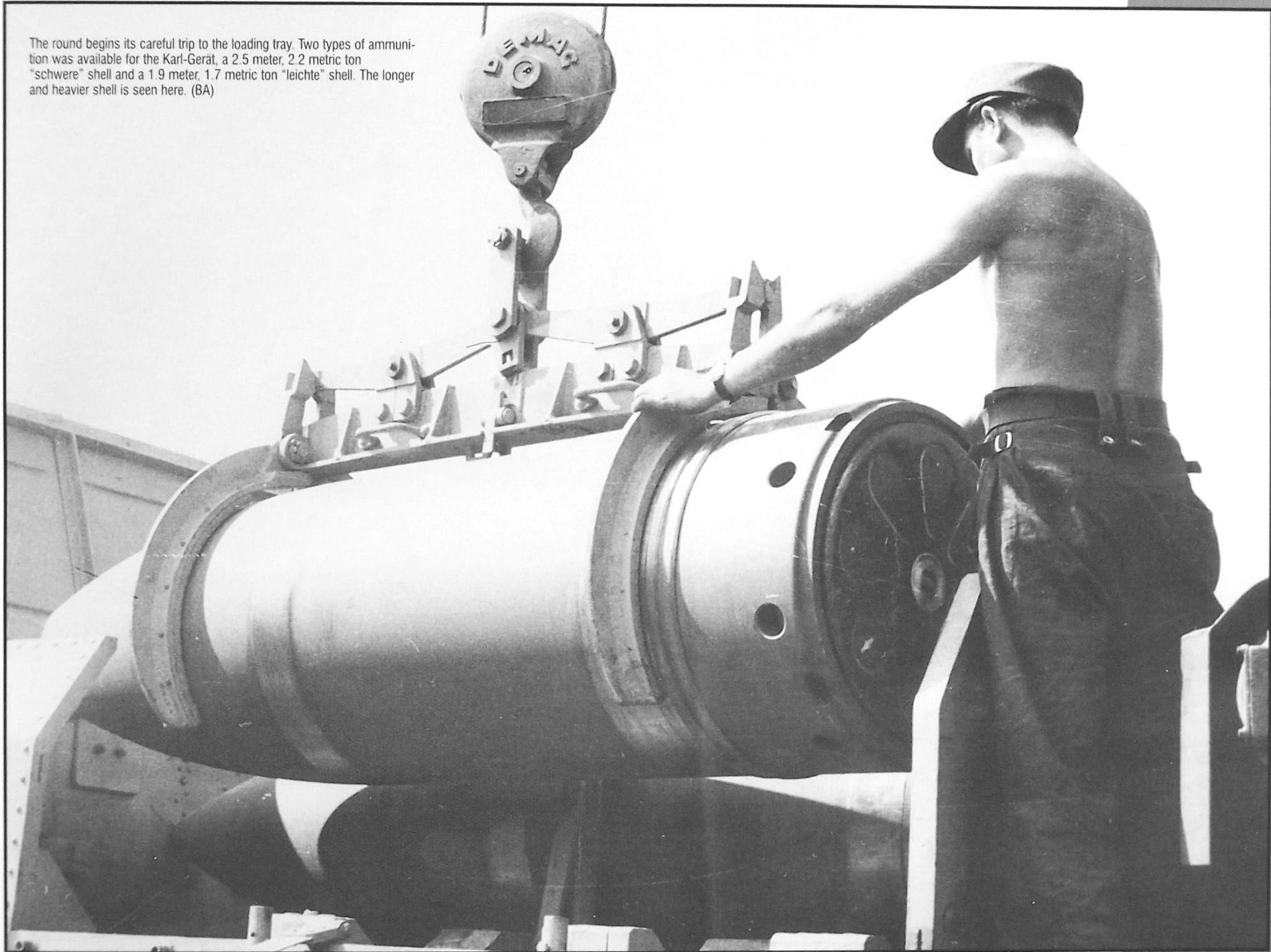








Top left: The front wheels were a solid dish split rim type. The tires are pneumatic, but early prototypes had bulletproof tires. **Top right:** The front steering link and leaf spring. The front axle was not powered. **Above:** The drive sprocket could differ in design, depending on the manufacturer. Like the tracks, the sprocket was also padded with rubber to reduce track wear and noise. **Right:** The suspension was quite complex and it required constant cleaning and maintenance. It could be susceptible to rocks or other debris becoming jammed between the closely spaced roadwheels.



The round begins its careful trip to the loading tray. Two types of ammunition was available for the Karl-Gerät, a 2.5 meter, 2.2 metric ton "schwere" shell and a 1.9 meter, 1.7 metric ton "leichte" shell. The longer and heavier shell is seen here. (BA)

Steel-Treadway Bridge M2



The M2 Treadway Bridge was a heavy pontoon bridge that had up to a 40-ton capacity. It could be deployed in almost any length and it was used over major river obstacles such as the Rhine and Moselle. The bridge was built using several purpose-built components, including the U.S. M2 Pneumatic Pontoon, M2 Treadway Bridge sections (composed of two parallel girders with reinforced steel grating), M2 Treadway truss support (to support the sections over gaps) and access ramps for approaches. Generally, it would take five and a half hours to place a 362-foot section of M2 Treadway during daylight and seven and a half hours at night. Engineers were expected to construct 50 feet of Treadway per hour. Many bridges were constructed in record time, as the following examples illustrate. To free the captured Ludendorff Bridge for repairs, the 291st Engineer Combat Battalion, assisted by the 988th and 998th Engineer Treadway Bridge Companies, began erecting a 1,032-foot, Class-40 steel Treadway bridge just south of the Ludendorff Bridge on March 10, 1945. It opened to traffic on March 11 and was the first American floating bridge over the Rhine. **Above:** Brockway, White, Ward LaFrance and FWD all produced "bridge erector trucks," which were used for transporting bridging components and for the erection of bridges, both pneumatic and fixed. Approximately 3,075 were produced and were all very similar. This photograph shows a Brockway Model B666 Treadway truck with hardtop. It was a 6-Ton, 6x6-cargo truck with a double-jib gantry operated by four hydraulic cylinders powered by the truck's engine. The 4-ton gantry was controlled from a platform at the front of the cargo body. A double drum front winch, snatch block and rear fairlead allowed for extended lifting and lowering of Treadways and equipment from the rear. (NARA)



The Treadway Bridge built over the Rhine at Bonn became known in VII Corps as the "Beer" Bridge. Major General J. Lawton Collins, the VII Corps commander, challenged Lieutenant Colonel Hershel Lynn's 237th Engineer Combat Battalion to build an M2 Treadway bridge in 10 hours—the reward would be a beer party for the entire battalion. The unit started work at 0615 on March 22, 1945 and finished the 1,340-foot bridge at 1626 that afternoon. General Collins considered 10 hours and 11 minutes close enough and threw a beer bash for the battalion the next day. Lieutenant Colonel J. H. Jackson's 160th Engineer Combat Battalion built a 1,896-foot long Treadway bridge at Mainz on March 29, 1945. This was the longest tactical bridge built across the Rhine and the longest built in the European Theater of Operations. Here, an erector truck with the gantry extended is supporting two inflated pneumatic pontoons. The pontoons have the saddles attached and the entire load is secured. There is a cut-down rubber tire placed on the angular gantry rest to prevent puncturing the rafts. Note the extended top pistons and Treadway handling chains hanging at the rear. (NARA)



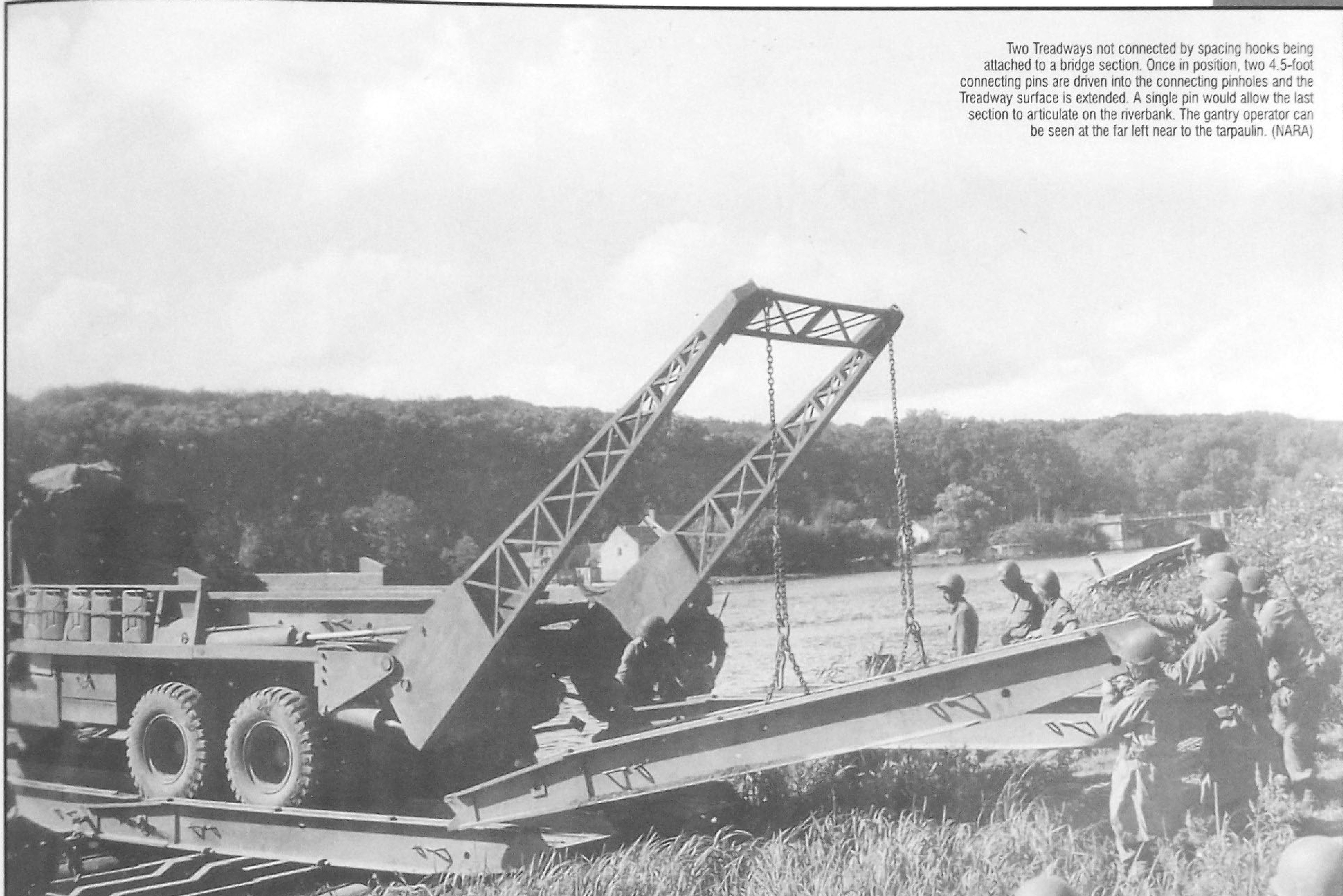
A line of trucks from the Third Armored Division approaching a bridging site. The erector trucks show the 18-ton stowed rafts in their carrying cases and other bridging equipment. Tire chains are in use for the muddy roads. Normal loads were four Treadways, two knockdown saddles, two pneumatic floats in carrying cases (975 pounds each), anchors, pins, lines and other engineering equipment. (NARA)



An erector truck lifting and moving an inflated pontoon. The chains are secured to the saddle beams that sit on wooden bearing plates. The two ends have rounded end-bearing plates and are shown angled up. The engineers are guiding the pontoon by its rope girdle and halter. If possible, inflation and set up was done in protected areas near the launching site. (NARA)

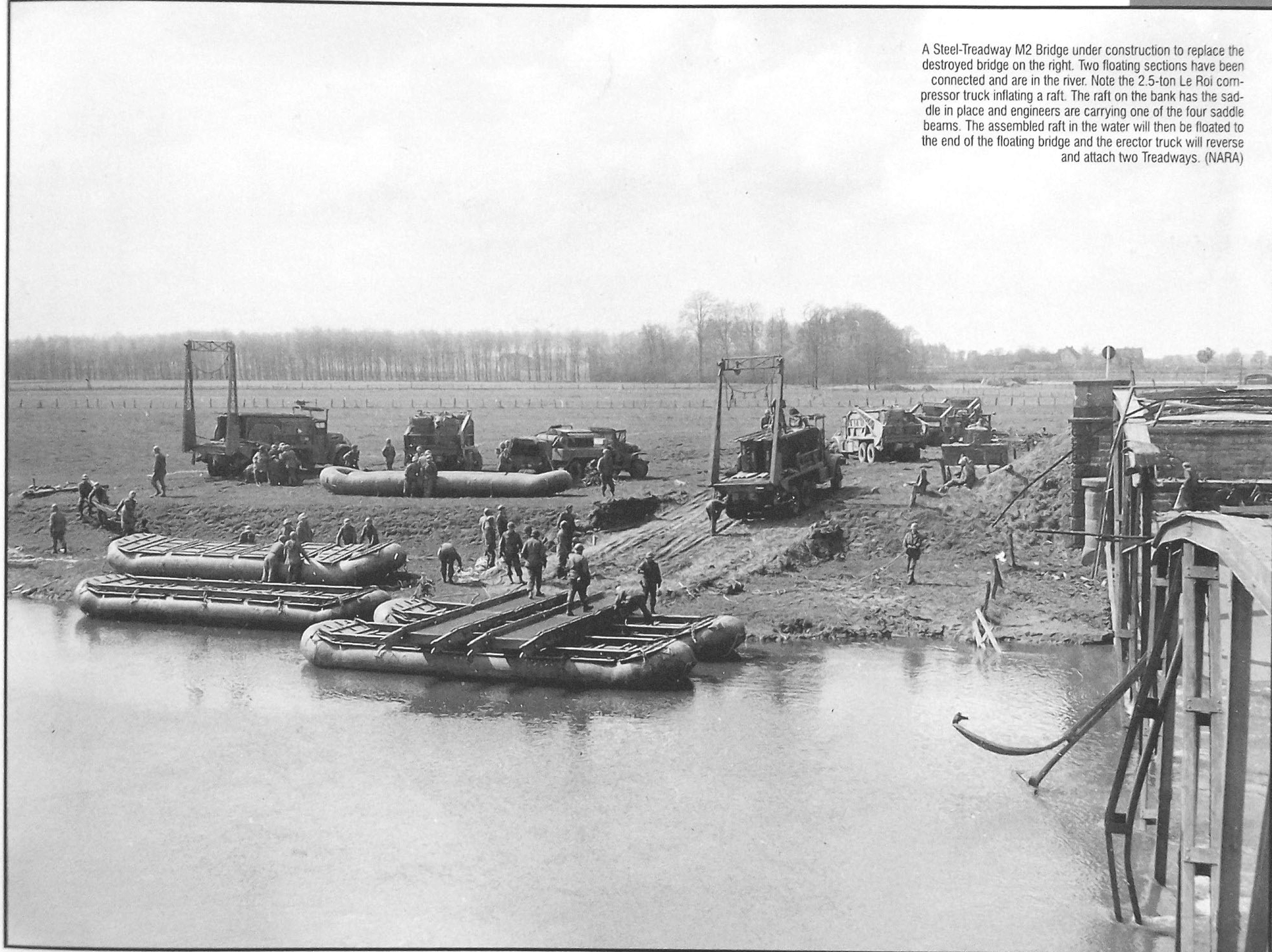


Two sets of trestle spans set up and Treadway sections being laid out in pairs. The Treadways were joined by Treadway-spacing hooks, which fit into small steel eyes. The fixed bridge section consisted of two trestle columns with shoes on the ground and a horizontal trestle transom. The long bracing struts (22ft) increased the stability of the spans subjected to heavy traffic. (NARA)

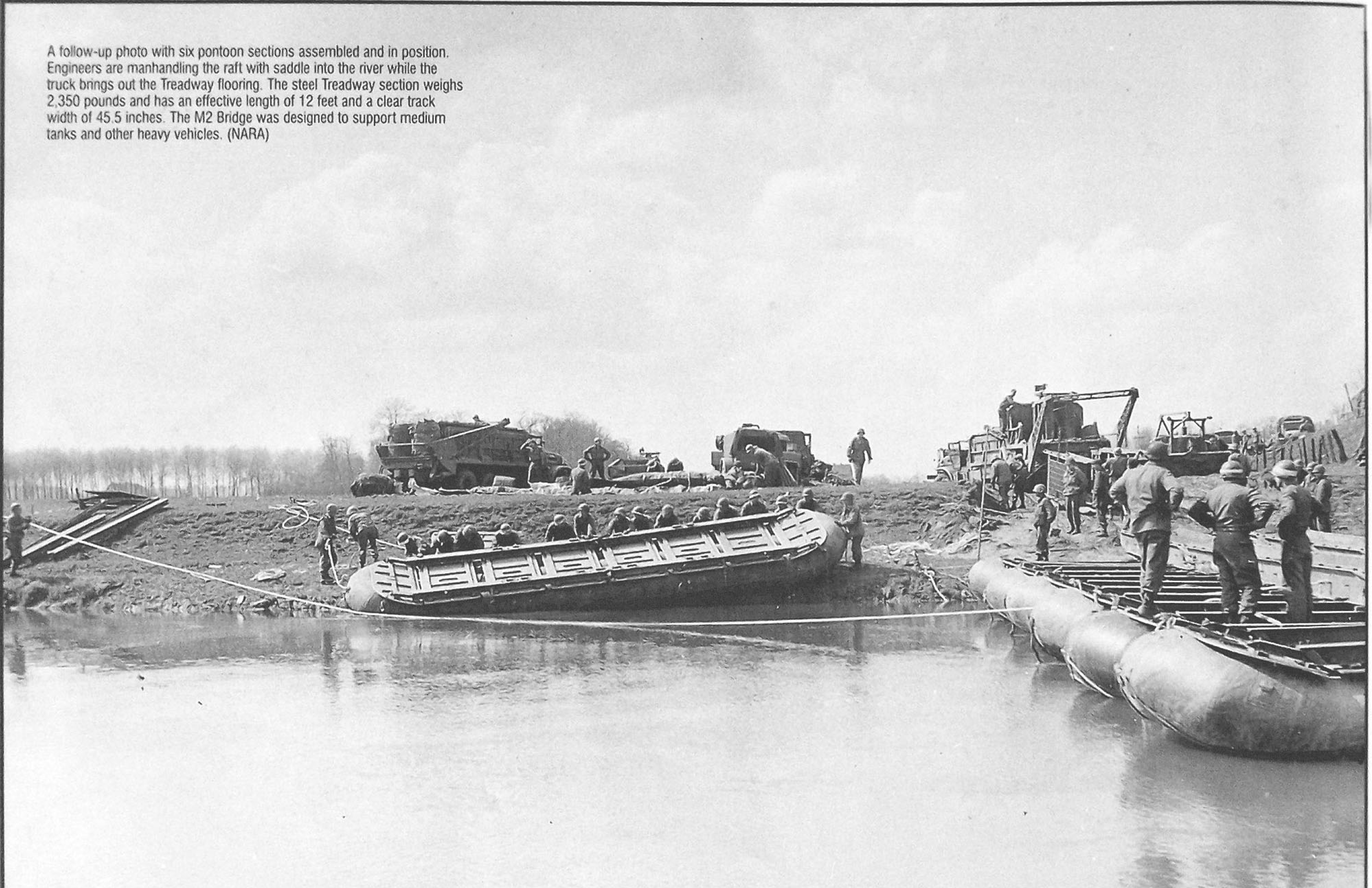

Two Treadways not connected by spacing hooks being attached to a bridge section. Once in position, two 4.5-foot connecting pins are driven into the connecting pinholes and the Treadway surface is extended. A single pin would allow the last section to articulate on the riverbank. The gantry operator can be seen at the far left near to the tarpaulin. (NARA)



Six interior bearing plates and four saddle beams were attached to form a partial saddle. The saddle is being set onto a raft with the secured center tube in position. The saddle was then fastened to the float by straps attached to D-rings. Engineers below the gantry near the other rafts are attaching the end bearing plates. The pneumatic float is made of rubberized canvas; it is 8 feet 3 inches wide, 33 feet long and 33 inches deep with a floor. (NARA)



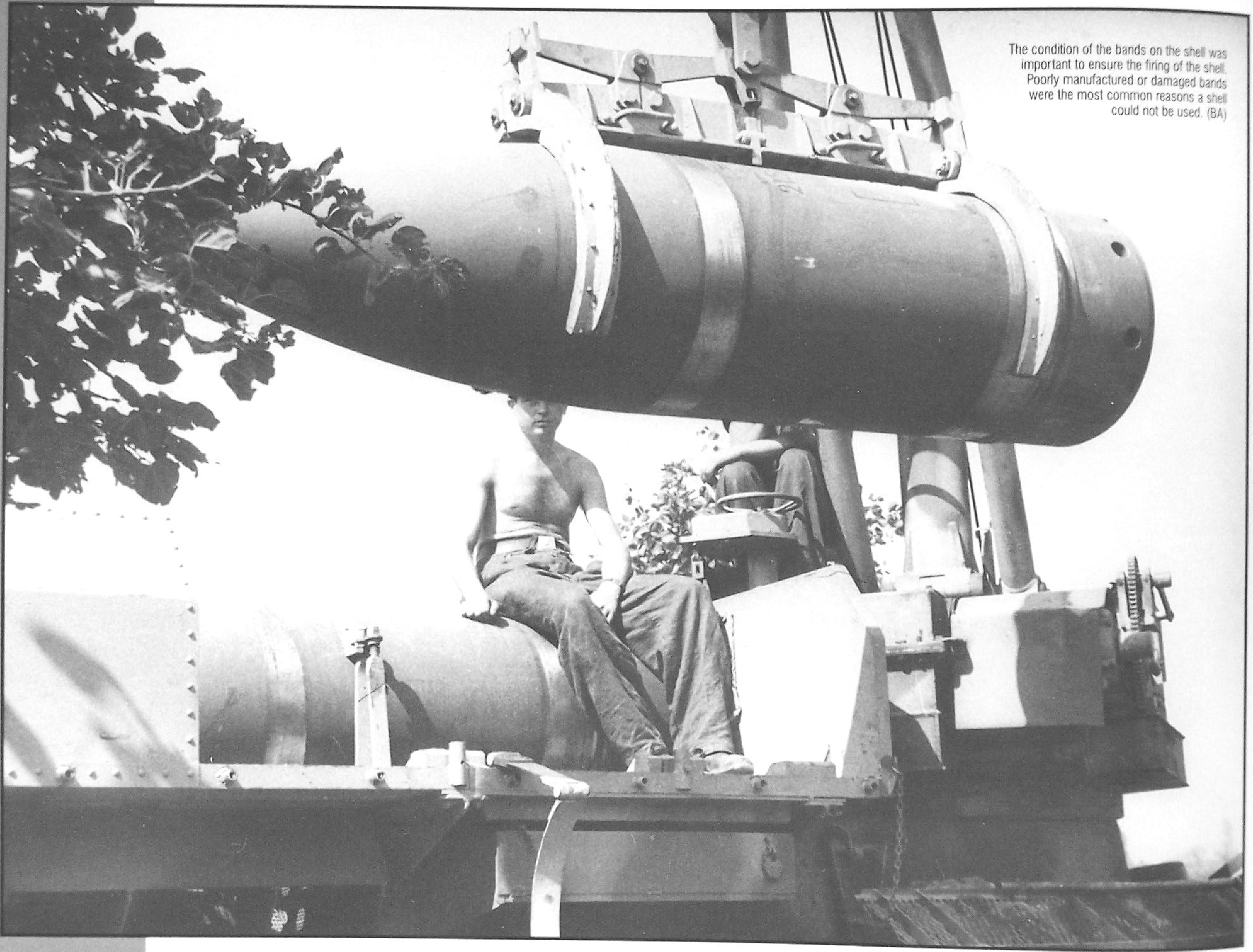
A Steel-Treadway M2 Bridge under construction to replace the destroyed bridge on the right. Two floating sections have been connected and are in the river. Note the 2.5-ton Le Roi compressor truck inflating a raft. The raft on the bank has the saddle in place and engineers are carrying one of the four saddle beams. The assembled raft in the water will then be floated to the end of the floating bridge and the erector truck will reverse and attach two Treadways. (NARA)



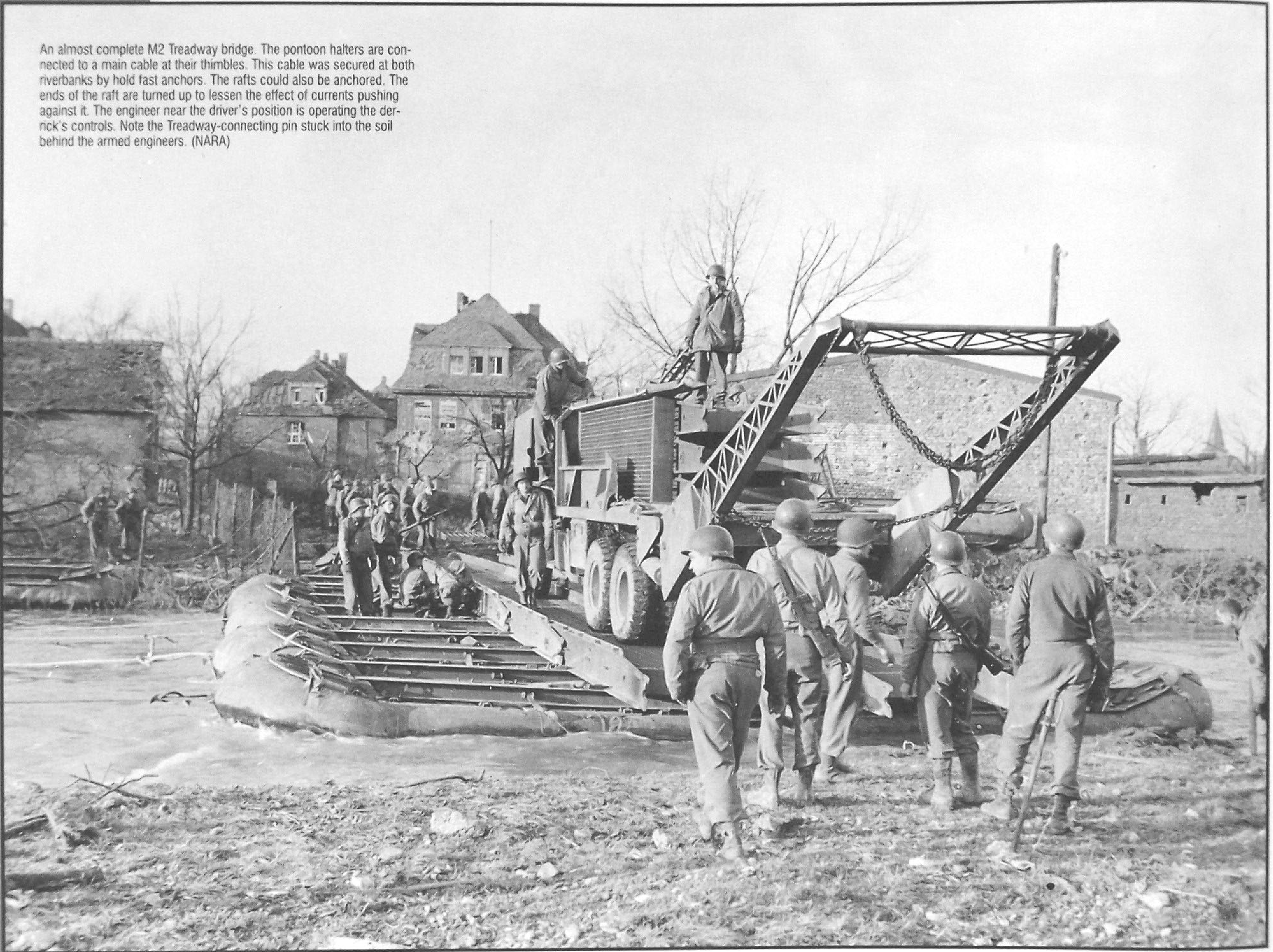
A follow-up photo with six pontoon sections assembled and in position. Engineers are manhandling the raft with saddle into the river while the truck brings out the Treadway flooring. The steel Treadway section weighs 2,350 pounds and has an effective length of 12 feet and a clear track width of 45.5 inches. The M2 Bridge was designed to support medium tanks and other heavy vehicles. (NARA)



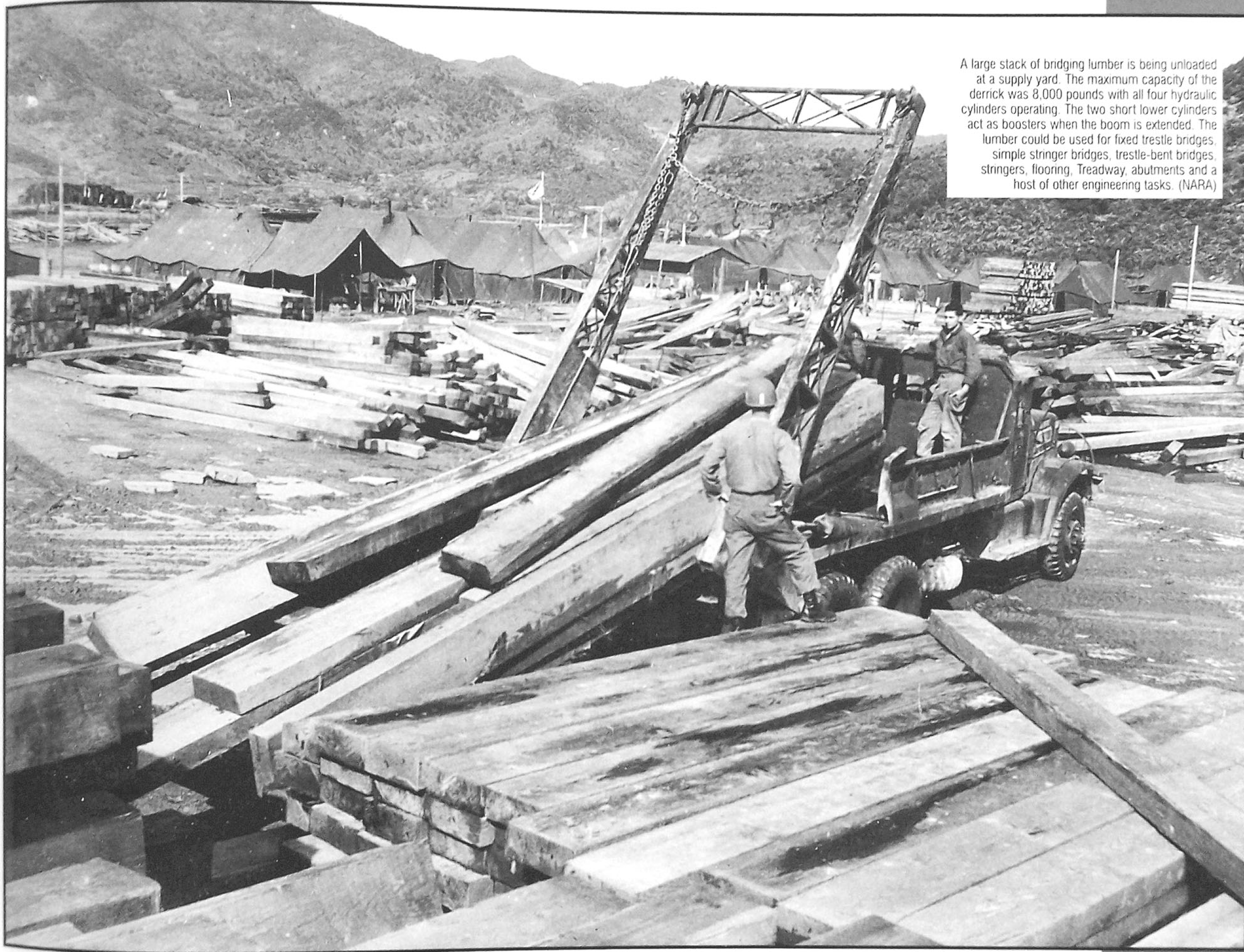
A view from the bed of an erector truck showing engineers placing Treadways onto the saddle beams. They were locked in place by Treadway retainer clamps. References show different patterns of flooring on the steel Treadways but the "I-beam-lok" flooring shown is the most common. Note the separator/spreader bar holding the Treadway handling chains apart. (NARA)



The condition of the bands on the shell was important to ensure the firing of the shell. Poorly manufactured or damaged bands were the most common reasons a shell could not be used. (BA)



An almost complete M2 Treadway bridge. The pontoon halters are connected to a main cable at their thimbles. This cable was secured at both riverbanks by hold fast anchors. The rafts could also be anchored. The ends of the raft are turned up to lessen the effect of currents pushing against it. The engineer near the driver's position is operating the derrick's controls. Note the Treadway-connecting pin stuck into the soil behind the armed engineers. (NARA)

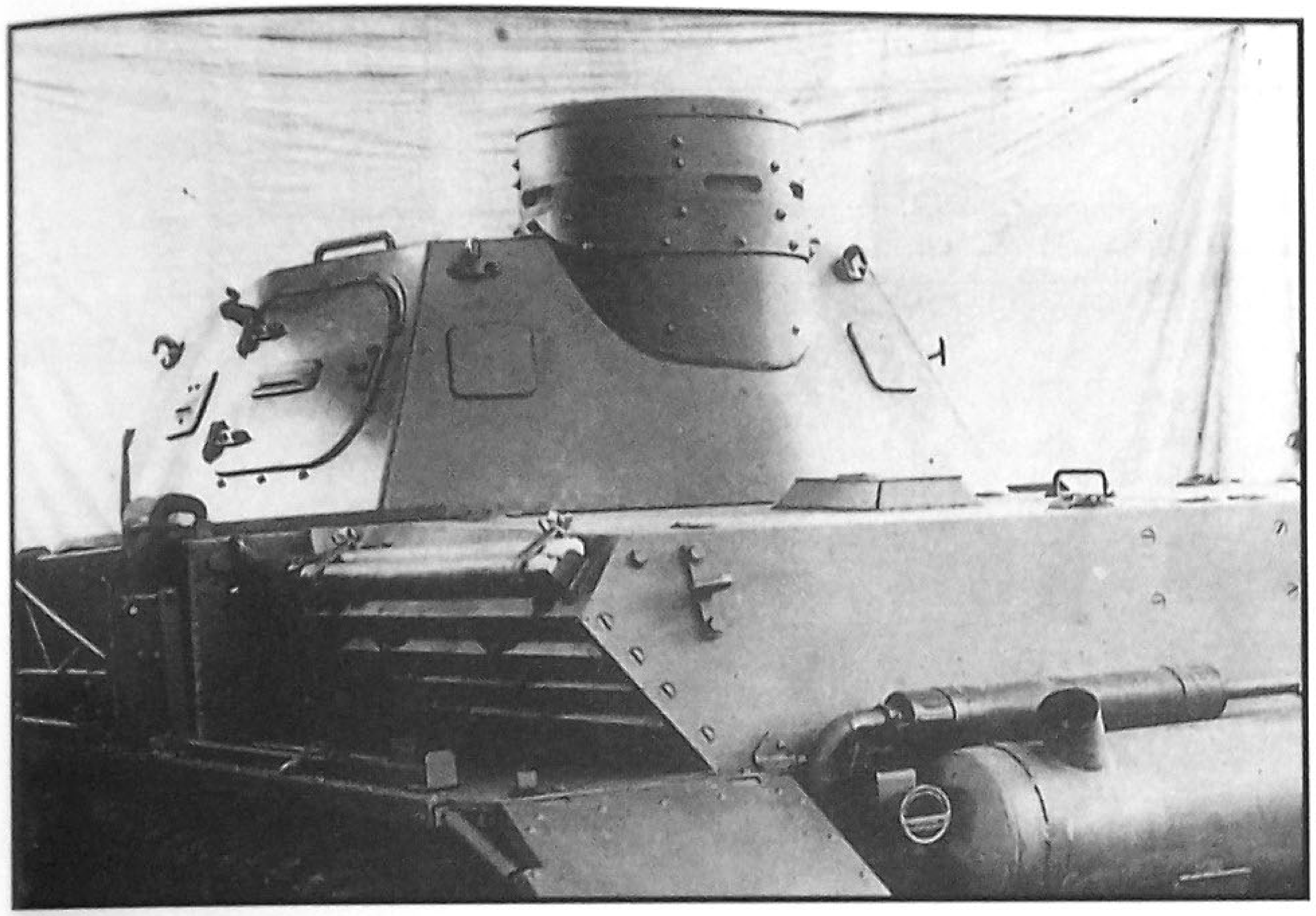


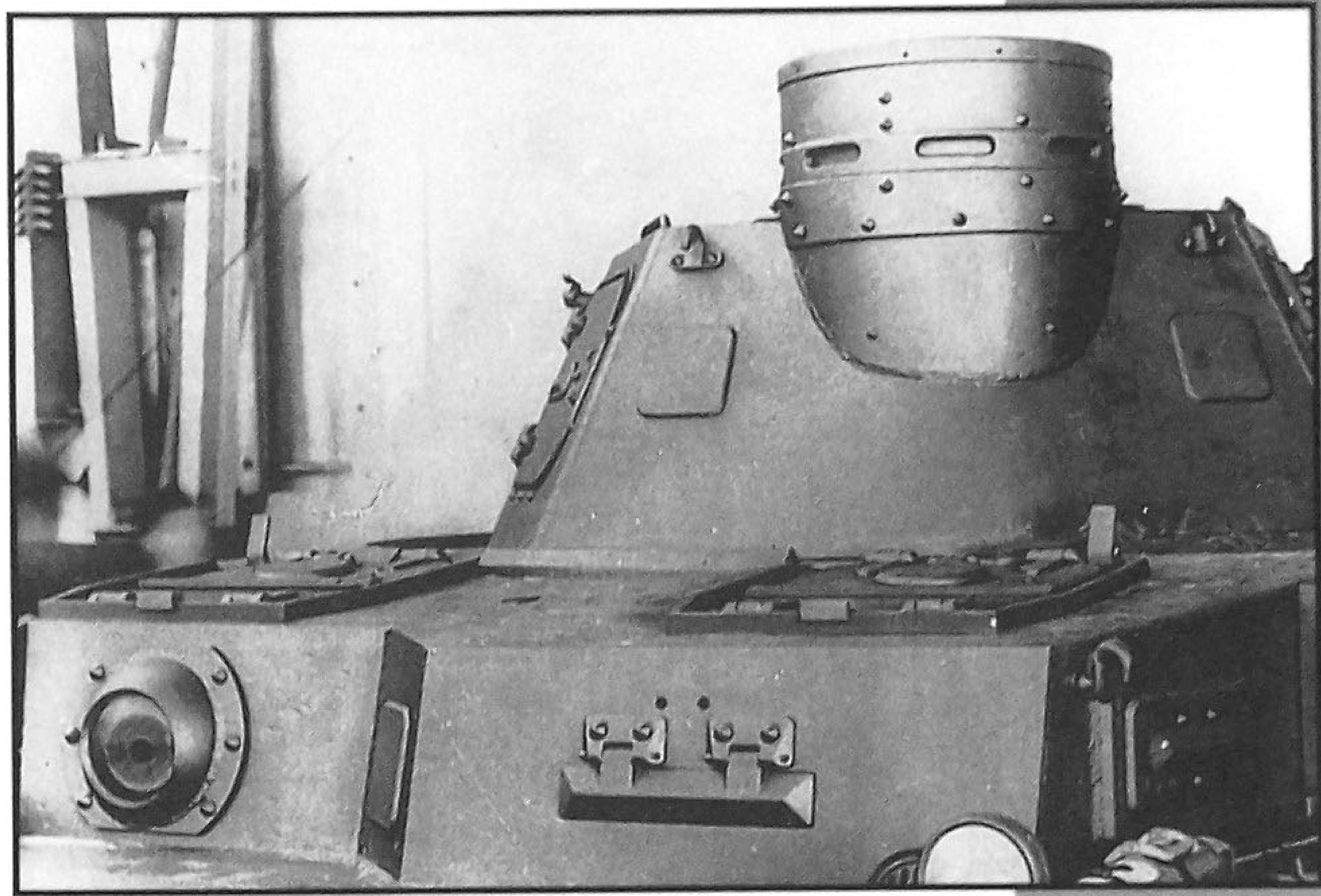
A large stack of bridging lumber is being unloaded at a supply yard. The maximum capacity of the derrick was 8,000 pounds with all four hydraulic cylinders operating. The two short lower cylinders act as boosters when the boom is extended. The lumber could be used for fixed trestle bridges, simple stringer bridges, trestle-bent bridges, stringers, flooring, Treadway, abutments and a host of other engineering tasks. (NARA)

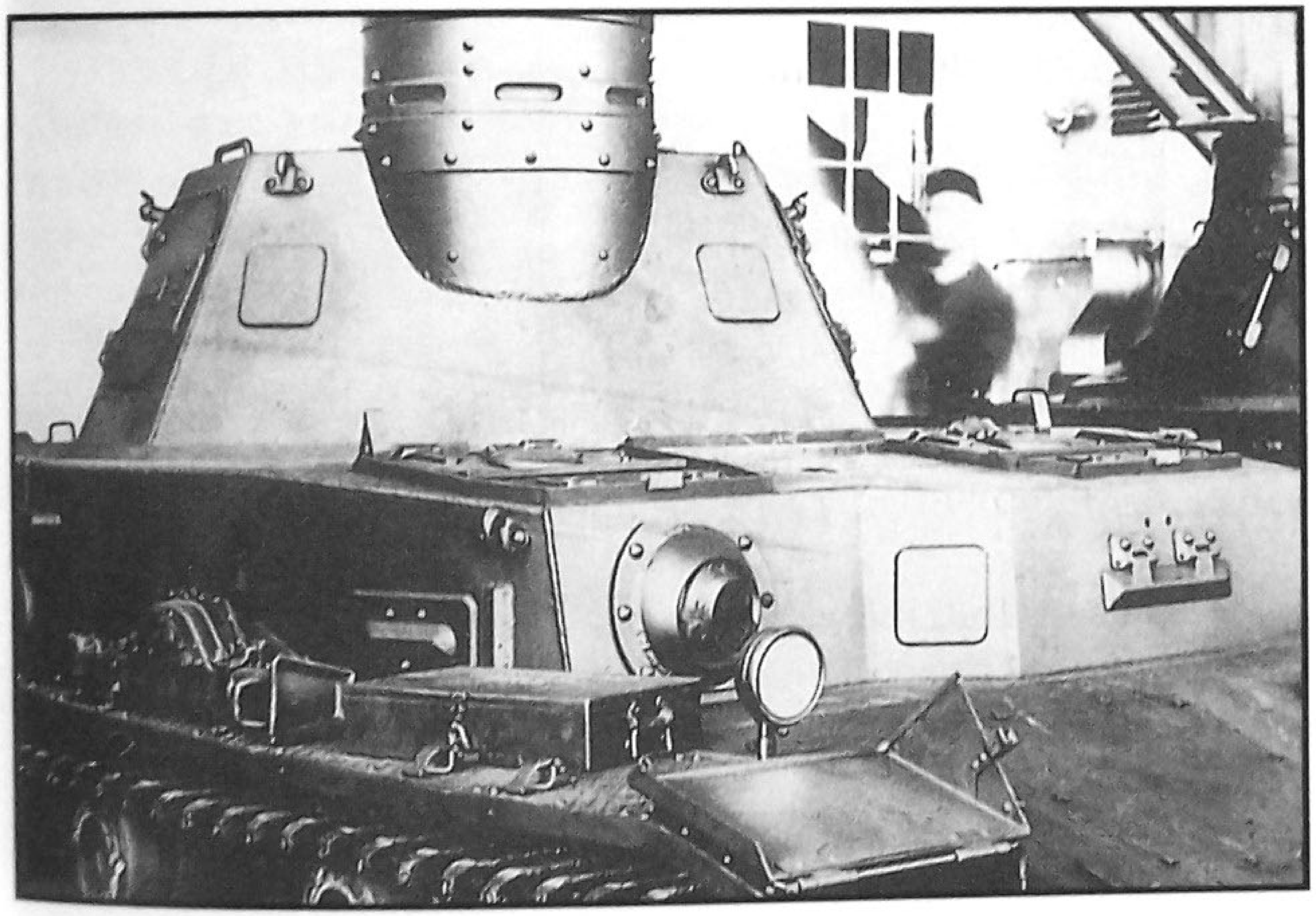
Pz.Kpfw.IV Ausf. A

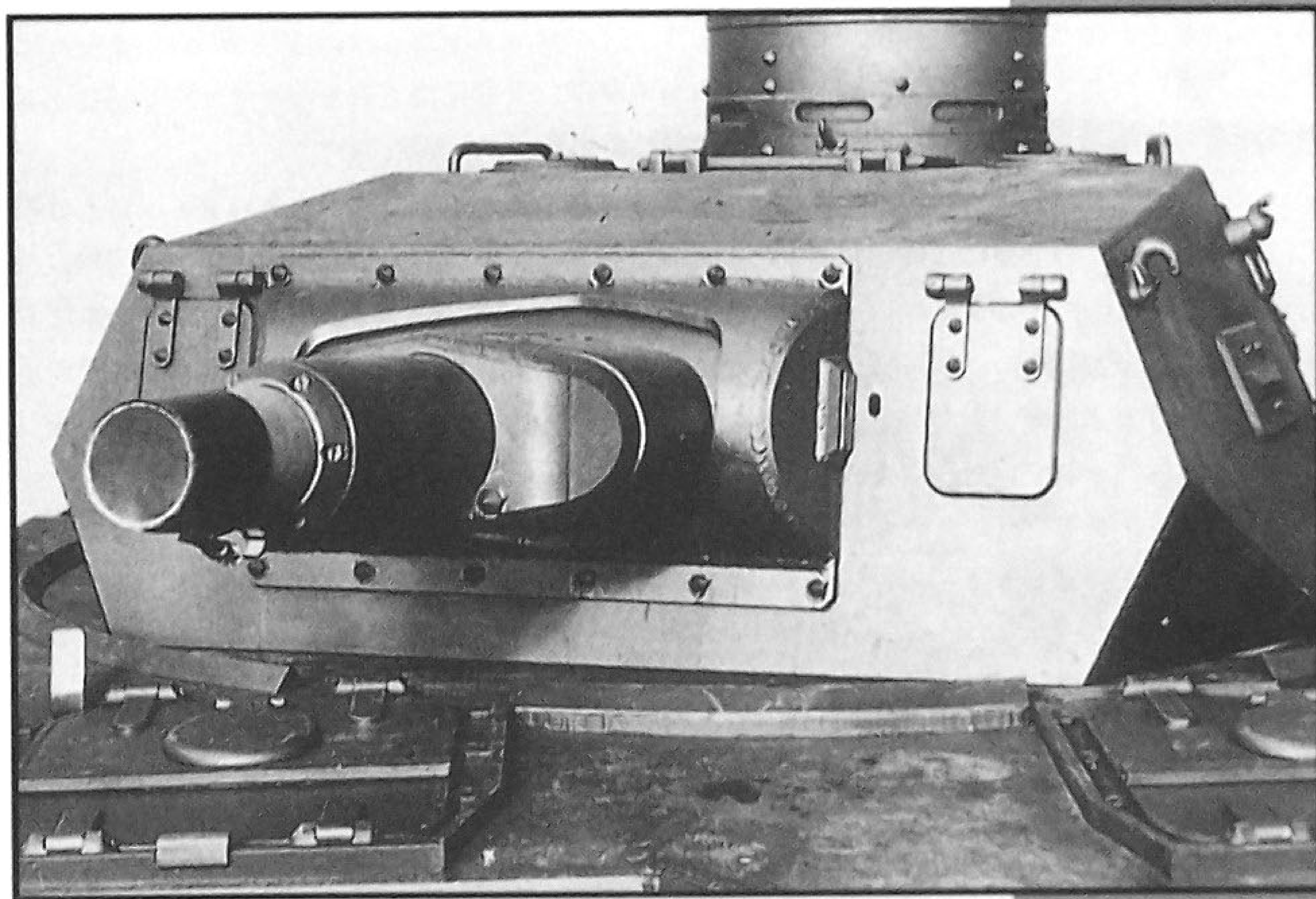


The operational history of the Begleitwagen (best translated as support vehicle) started in 1937 when the first two vehicles left the assembly plant. Originally, the Pz.Kpfw. IV was developed to support the other tanks in the armored units. Strongpoints, anti-tank guns and artillery could be knocked out using high explosive shells and enemy tanks engaged with armored piercing shells with high explosive fillers. These proved to be the most effective weapon that the Panzers had for penetrating the 35 to 40mm thick armor on French Somua, Renault, and Hotchkiss tanks in 1940. Armor protection was of secondary importance. **Above:** This well-known shot depicts a Pz.Kpfw. IV during the opening phases of the Polish campaign. Positive unit identification is not possible, but other photos in the series indicate that the tank is from the 1st battalion of the 4th company or perhaps from Pz.Rgt 1. It was part of the 1. Panzerdivision and reported 28 Pz.Kpfw. IV available for service at the beginning of the campaign. (BA)









Above: Four views of the Pz.Kpfw. IV Ausf A prototype showing the distinctive details of the commander's cupola, gun mantlet and the rear hull. Note the recessed screws used to assemble the rear hull and the many rivets used in the construction of the cupola and mantlet. (IWM) The Pz.Kpfw. IV Ausf. A can be recognized easily by the complex cylindrical-shaped commander's cupola, wider superstructure for storing additional rounds of 75 mm ammunition and the rounded belly plate at the front. Only 35 Ausf. A were assembled, the last five had Ausf. B hulls due to delayed delivery from a new armor supplier. Starting in 1940, older models of the Pz.Kpfw. IV were upgraded to the newer standards by adding 30mm thick armor plates to the front. Several Ausf. A were thus converted.



This initial version of the Pz.Kpfw. IV had 14.5mm thick plates on all vertical surfaces, which provided complete protection against steel-cored armor-piercing bullets fired by machineguns and rifles. This was sufficient to regain mobility that had been lost due to massed machine gun fire in World War I. Germany learned that the French were working on the development of a 25mm automatic cannon. They were concerned that Panzers only protected against machine gun fire would be mowed down by these automatic weapons just like the cavalry had been decimated in World War I. Therefore, frontal armor on the next model of the Pz.Kpfw. IV, the Ausf. B, was increased to 30mm thickness. (BA)



Above: An Ausf. A in the 8th company, the medium company in the regiment's second battalion. Again, no further marking is visible to identify the unit. Note the deflector for the antenna rod under the gun barrel. (Photo van Berkel)





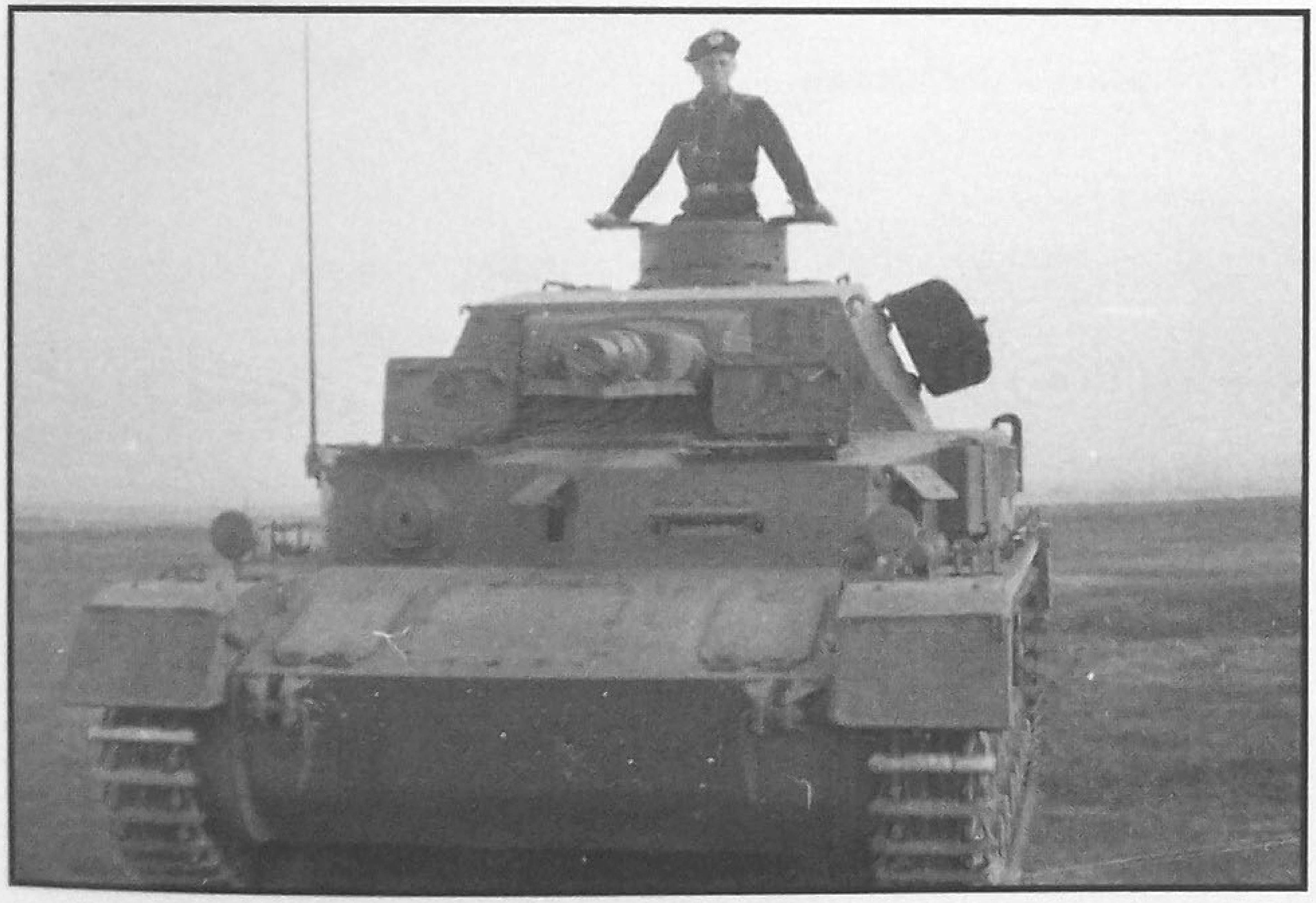




Top left: This photo of an Ausf. A was taken at a training ground. It shows no markings other than the black rhomboid numbering plate. The vehicle number 824 is not painted in white, but possibly in the vehicles base color dark gray or in yellow. (Photo private) **Top right:** The same vehicle from the left hand side. No Notek light is visible, so this photo was taken before 1940. (Photo private) **Above left:** Here an Ausf. A leads a row of Ausf. Bs. Initially, up to three Pz.Kpfw. IV were issued to each medium company, with more added as production increased. (Photo van Berkel) **Above right:** Carefully camouflaged with foliage, this Ausf. A is hidden in a forest. The curved front plate is visible, the vision and machine pistol port to the right of the driver's visor is opened for better ventilation. (Photo van Berkel)

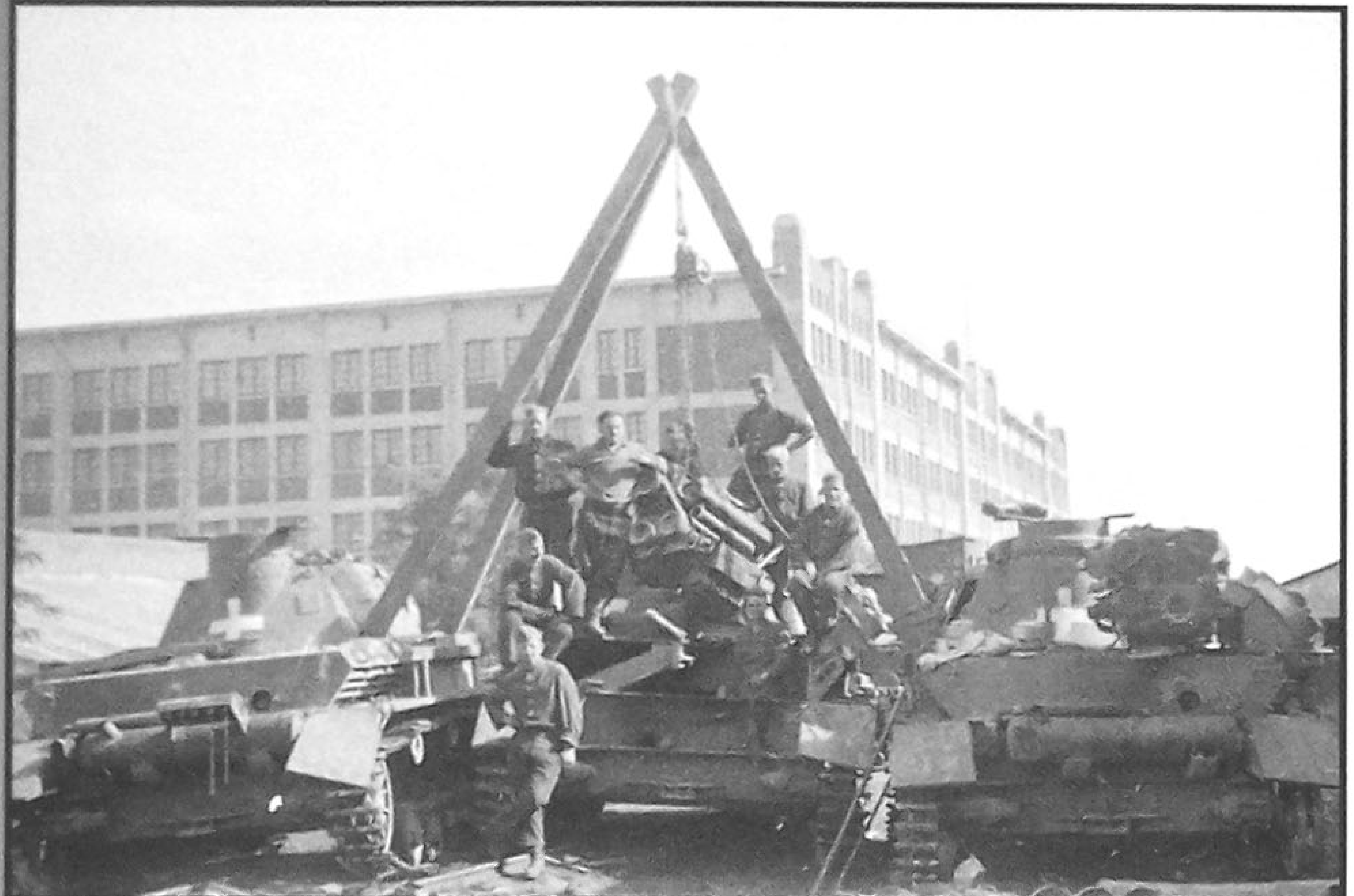








Top left: This Ausf. A is finished in the standard dark gray base color. The lorry still shows the earlier style three-tone camouflage of green, brown, and sand. (Photo Hoppe) **Top right:** Tanks of Pz.Rgt. 6 in 1938. The first and third vehicles are Ausf. As. Again there is no further marking visible other than the tactical numbers painted on rhomboid plates. (Photo Konetzny) **Above left:** Again a tank of Pz.Rgt. 6, 3rd Pz.Div. The early style two-part lids for the driver and radio-operator hatches are opened wide. (Photo DWA/Kwasny) **Above right:** The 6th company of Pz.Rgt. 6 is being entrained for transport to Poland in 1939. The fourth company of each pre-war battalion was left behind and assigned to a training and replacement battalion. Therefore, each battalion numbered the medium company with their Pz.Kpfw. IVs differently (the numbers 2, 3, 4, 5, 6, 7, and 8 were all used). Large white crosses were added for national identification before the outbreak of hostilities. (Photo DWA/Kwasny)







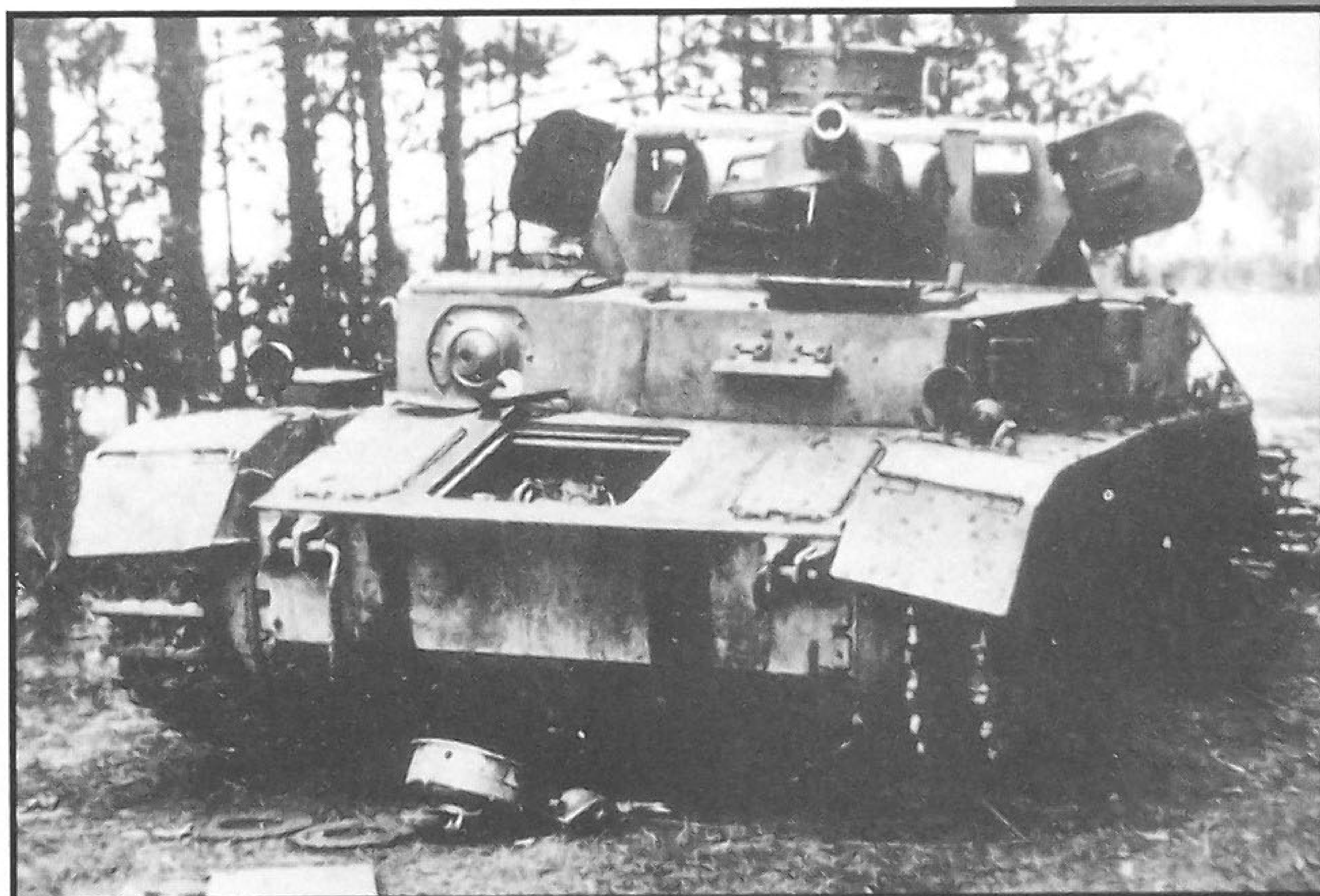


Top left: Using a simple wooden jib erected between two tanks, the engine of a third is being removed. These Pz.Rgt. 6 tanks show minor damage from numerous hits during their first fights. (Photo DWA/Kwasny) **Top right:** Note the rectangular pistol ports on the turret's rear plate. Still there are no further markings visible other than the white crosses. (Photo Konetzny) **Above left:** This completely cannibalized Ausf. A doesn't reveal significant armor damage, maybe it was hit on the other side. Compared with the other photos, this tank shows a remarkable variety of markings. The tactical number was painted beside the white cross, underlined by a bar. This vehicle belonged to 1. Panzerdivision. (Photo S. Clark) **Above right:** Returning to Germany, these tanks of Pz.Rgt. 6 can be seen during gunnery practice at a training ground. The white crosses on the turret sides were substituted for new style Balkenkreuze on the hull's side armor, now being much less prominent. (Photo DWA/Kwasny)

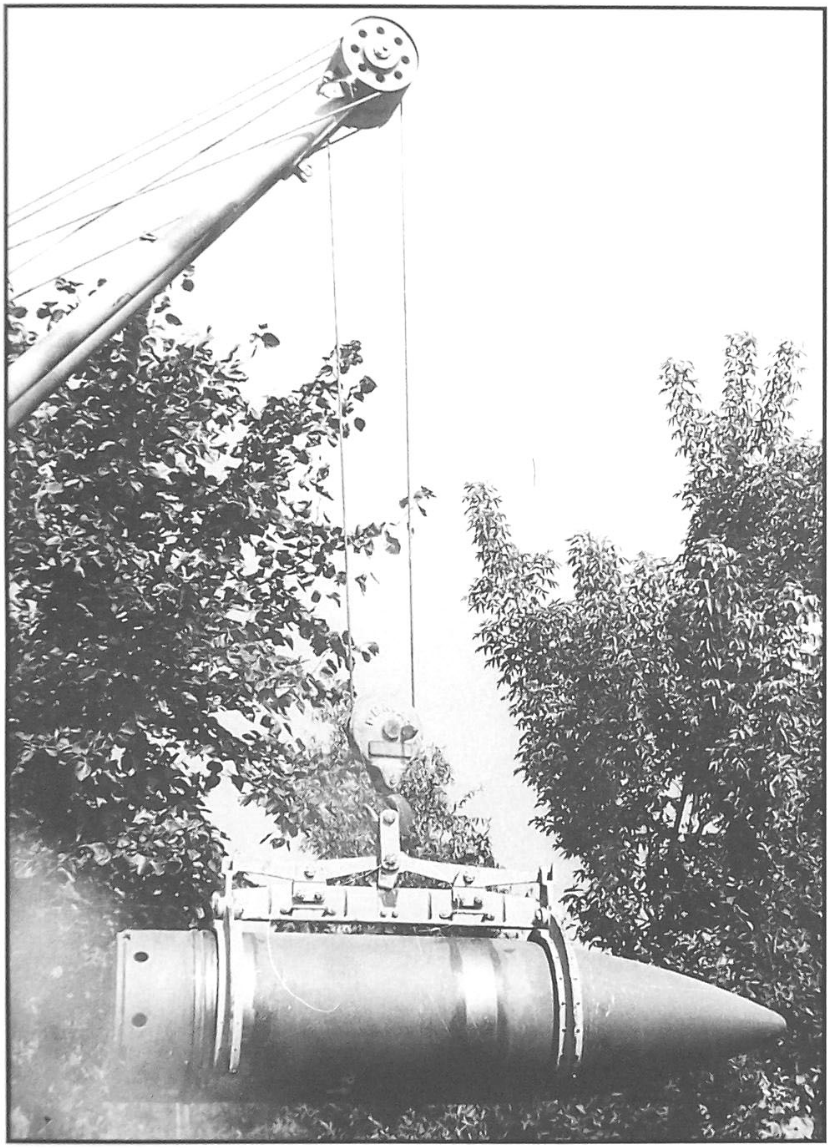








Top left: Photographed in the garrison of Wünstorf, the crew of this Ausf. A poses for a photo. Prior to the western campaign, large white numbers were painted on the turret sides. (Photo v. Aufsess) **Top right:** This Ausf. A passes infantrymen during Operation Barbarossa. The escape hatch covers the vehicle number painted on the turret. (Photo König) **Above left:** Again two Ausf. A vehicles of Pz.Rgt. 1 or 2. 1. Panzerdivision. This photo was taken during seizure of the Weygand line, May 1940. The crew has added a long section of spare tracks to the tank's bow, possibly to reinforce the thin frontal armor. (Photo A. Takigushi) **Above right:** This Ausf. A met its fate in Russia, the unit again is unknown. This vehicle is interesting, since it shows additional 30mm plates back fitted to the front. The deflector below the gun is of a later type as well. (Photo Foto-Archiv)





Above left: This shows the upper linkages of the crane to good advantage. Note the perforated base of the round. (BA)
Above right: The shell is eased into the loading tray. The gunner at the right of the photo is standing on the large engine ventilator next to the driver's station. Two different engines were used in the production of the Karl-Gerät, both gasoline and diesel. Number VI used a MB 507 gasoline engine. (BA)

Type 97 'Chi-Ha' Medium Tank



The first medium tank the Japanese developed and produced was the Type 89. Even as it was being deployed it was recognized that a more capable successor was needed. Two different designs were considered as replacements. One was the 'Chi-Ni,' which was lighter and cheaper than the second candidate 'Chi-Ha.' At first the 'Chi-Ni' was the favorite, but when full-scale war broke out in 1937 it was decided that the 'Chi-Ha' was the better choice. The 'Chi-Ha' was standardized as the main medium tank for the Japanese during WWII and was designated the Type 97. **Above:** Under new management. This Type 97 also has the smoke canister mount on the turret side. There is also an empty anti-aircraft machine gun mount on the turret roof. (NARA)



Although considered obsolete by the time war started with the United States, it served throughout the war. The Type 97 was the most powerful and heavily armed Japanese tank at the beginning of WWII, but it was never a serious challenge to the USMC and Army Shermans. Its armor was very thin at around 25mm and was riveted on. The main armament was the Type 97 57mm gun, plus two 7.7 machine guns and it had a crew of 4. **Above:** On this Type 97 the antenna has been removed but plugs of some sort have been fitted to close the mount tubes. Notice the short rod on the left fender lying down. This is part of the auxiliary antenna that was sometimes mounted. (NARA)



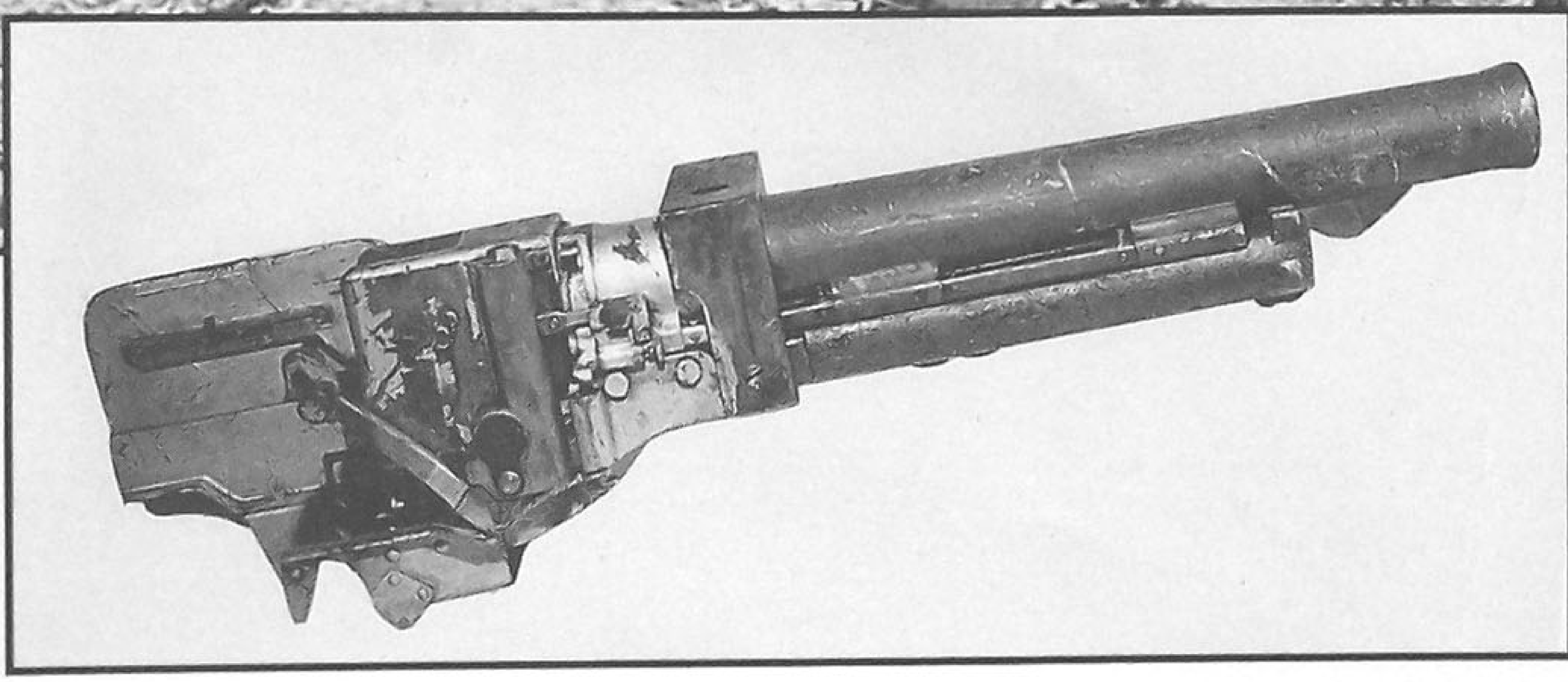
The suspension is the most interesting feature of the Type 97. There are two sets of bogies sprung horizontally, while the two outside wheels were sprung diagonally outwards. It weighed in around 14.3 tons and the engine was an AV-12 air-cooled diesel with 170 hp and a top speed of 23.5 mph. The Japanese never put any emphasis on tank production because of the priority given to ships and planes.

Above: Although missing its main gun, this Type 97 somehow kept its antenna on. Also notice the marking on the turret, which is a floating chrysanthemum and the two Japanese flags on the bow. This tank is one of the tanks from the 9th Tank Regiment, 5th Company on Saipan, which was probably knocked out by M5A1 light tanks from the 762nd Tank Battalion in June 1944. (NARA)



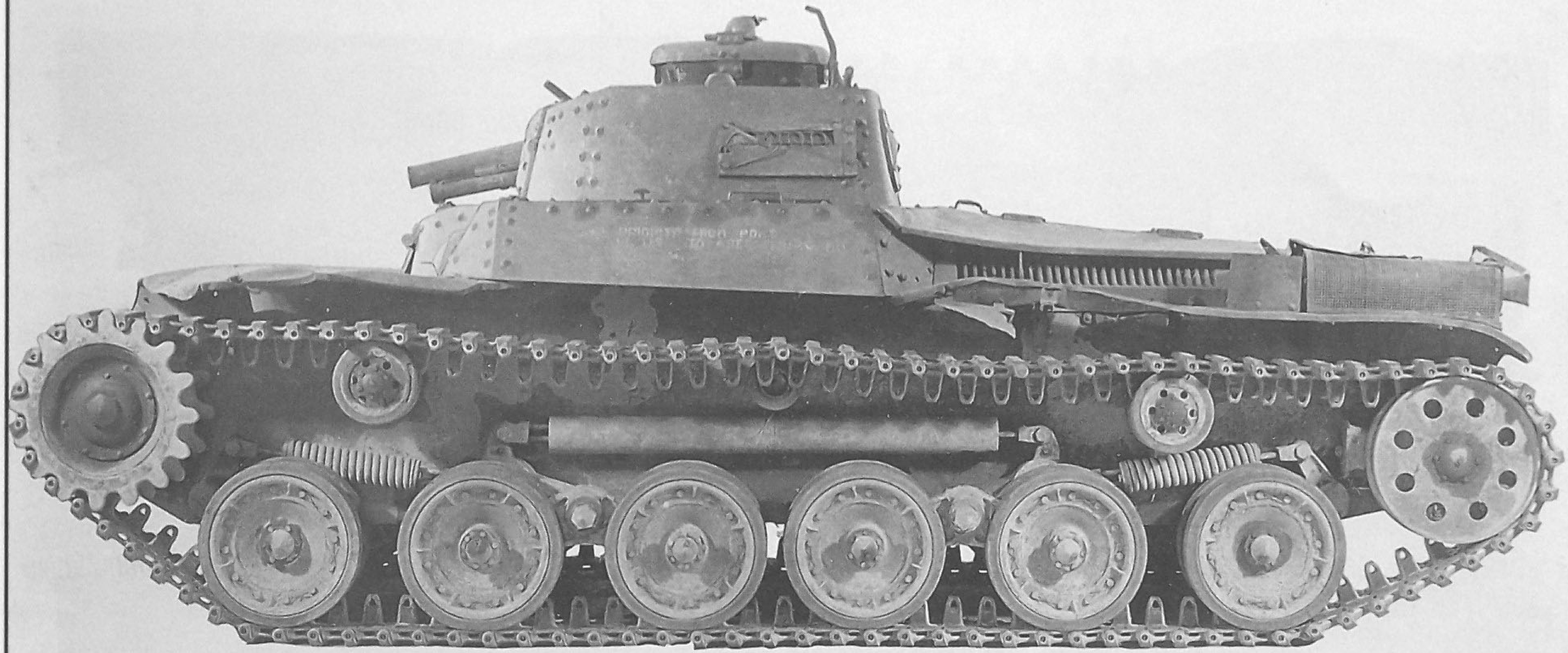
The Type 97 was produced from 1937 until late in the war with a total number produced of about 2,208, including the follow-up tank the Shinhoto. The main producer was Mitsubishi Jukogyo K.K., with some farming out of production to other smaller companies. The chassis for the Type 97 went on to be used in a variety of roles, including self-propelled guns and heavier tanks. **Above:** These Type 97s are being prepared for destruction after the war on Saishu Island, Japan on 1 October 1945.



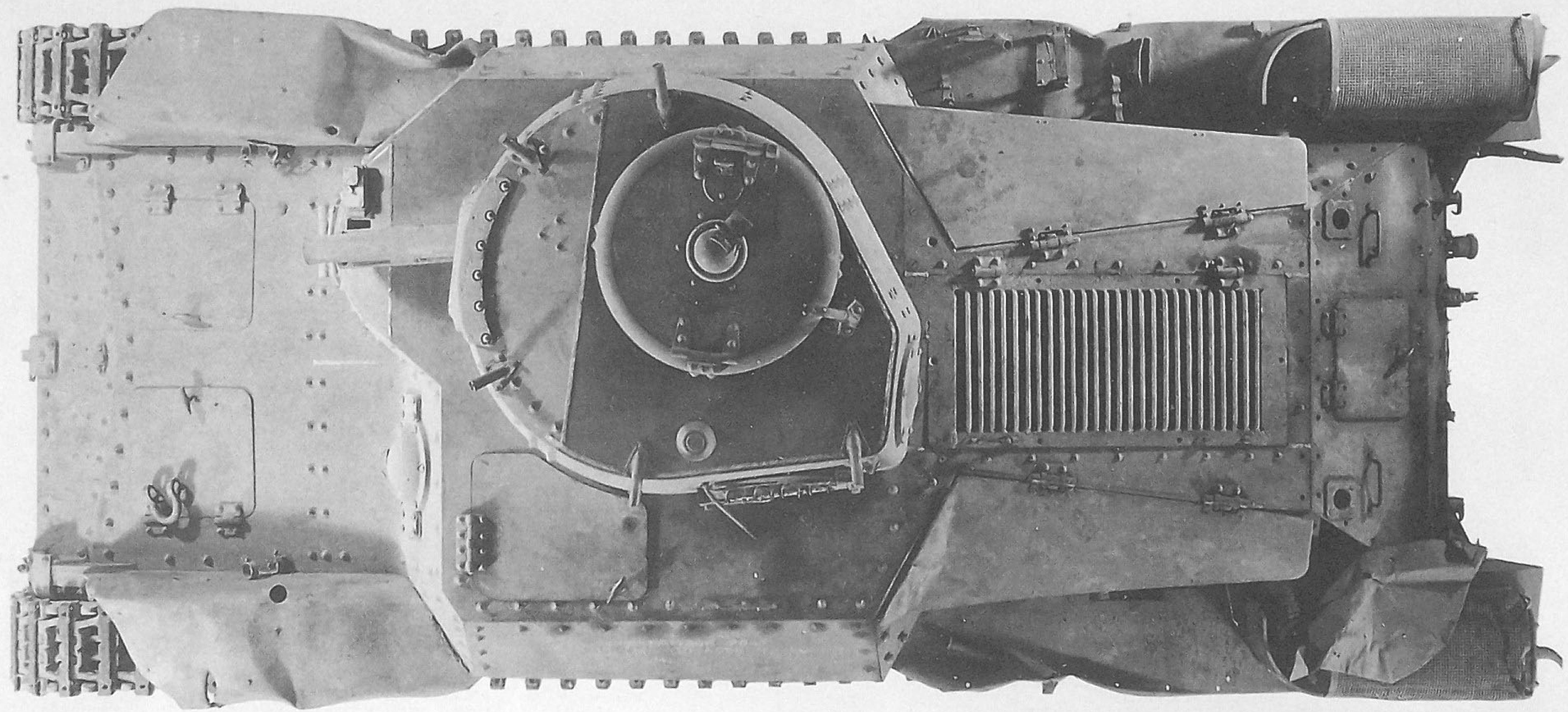


Above: Another photo of the Type 97's being destroyed on Saishu Island. There is also a Type 95 'Ha-Go' Light tank in the background with interesting turret markings. **Left:** The Type 97 57mm main gun that goes into the Type 97 Medium Tank.

This captured Type 97 has the smoke discharger on the side of the turret.



A top view of the previous Type 97. Notice the hole in the forward left fender. This is for the temporary antenna, which was usually associated with command tanks.




152 202
152 202